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THE NATIONAL GEOGRAPHIC MAGAZINE

War-torn Greece Looks Ahead

BY MAYNARD OWEN WILLIAMS

With Illustrations from Photographs by the Author

ON THE once-barren island of Makronisi, off the tip of Attica,* I watched tough Greek Army officers play the role of the good shepherd.

It is a strange reversal of the Biblical story, in which the good shepherd goes into the hills to find one stray sheep while the other ninety and nine are safe in the fold. For in this instance the ninety and nine are out in the hills away, fighting for Hellas. The lost one, who persists in staying that way, enjoys here the shelter of the strangest fold I have ever seen.

Makronisi, meaning Long Island, has been converted into a novel "concentration camp" where thousands of Communist sympathizers and former guerrilla fighters are being transformed into loyal, democratic citizens (pages 738, 739).

When the Greek Army found Communists or "fellow travelers" among its recruits, the high command decided to isolate them. About two years ago this camp was founded to receive them. Hundreds of captured or surrendered guerrilla fighters were added.

At the time Col. George Bairaktaris conceived the idea of Makronisi, his own brother was a Communist. Knowing his brother's basic loyalty, the colonel sought some way to let him, and thousands like him, prove it.

Of the 21,800 men who have been exposed to its course in regeneration, only 800 have been adjudged incorrigible. There is no harsh or "silent" treatment for those who refuse to swear allegiance to their homeland. There is a general feeling that time is on the side of the right.

At the time of my visit, some 7,800 "Pioneers" had returned to the ranks, to fight or die for Greece. Many helped free the Peloponnesus from Communist bands. Thousands now fight in the north. Others, unable to qualify for the Army, have returned to peaceful civilian pursuits.

Long Island is marked with patriotic slogans in whitewashed rocks, visible from miles away. "Hail to King Paul," shouts one steep hillside. "Hail to Hellas," echoes another.

With Col. James H. Phillips, Chief of Staff with the Joint U. S. Military Advisory and Planning Group; Dowsley Clark, Director of Information of the Economic Cooperation Administration; and Mrs. Clark, I went to the island to see this Greek experiment in regeneration.

A Queen's Triumphal Ride

As we reached the mess hall, decorated with Greek, British, and American flags, hundreds of Pioneers flocked up the hill. Here on this barren isle they seemed to be living an abundant life with spirit, vigor, and enthusiasm.

When Queen Frederika visited Makronisi, these men lifted her to their shoulders and paraded her through the camp. Some conservatives humped their eyebrows when the picture was published, but the multitude have taken the petite, hard-working queen to their hearts (page 712).

Colonel Bairaktaris's first step at the camp was to create an atmosphere of civilized behavior, within which neither officer nor comrade could reproach a Pioneer for his past.

* All place names in this article are located on the map supplement, "Classical Lands of the Mediterranean," with this issue of the NATIONAL GEOGRAPHIC.

Queen Frederika, Young, Beautiful, and Democratic, Is the Idol of Greek Soldiers

The German-born, English-reared Queen has won her adopted country's affection by caring for its refugee children (pages 719, 721). She rides the shoulders of repentant Communists on Makronisi. The picture, here rephotographed with a Makronisi "Pioneer," was displayed in Athens (pages 731, 738, 739).

Then, within this favorable environment, each individual is encouraged to "find himself" and develop his talents to the full.

While the leaven is working, Communist propaganda is honestly met in discussion. Makronisi has its own 40-page newspaper and a broadcasting station.

When a Bulgar radio invited the Pioneers to "leave the servitude of camp for the good guerrilla life," Greece's alert Minister of the Press, Michael Aitanos, sparked back:

"I've seen to it that every man on Makronisi has heard your plea. Are you doing the same for your boys?"

Probably not, for despite added help from Albania and Bulgaria, the "good guerrilla life," these days, is not so good.

We entered the mess hall with the men, to drink our ceremonial coffee. Suddenly the sound of magnificent group singing flooded the hall. The composer of the battalion song now fights in the Grammos Mountains. His stirring words express the common sense:

"To Hellas's sun and waves and much-loved land we pledge ourselves. Our strong Hellenic heartbeat drives us on."

"Christ is risen" pennons, left over from Easter, lent a festive touch. Beside a cardboard bell tower paper swallows had built their nests. Between portraits of King and Queen was a life-sized Christ.

Our luncheon host, a major, was magnetic, handsome, and realistic; his approach that of conviction: "I was a Communist, too, but I got over it. For, despite everything, I am a Greek."

Few malcontents can resist that appeal, although I interviewed some who still do.

Like most of Greece, one man was "tired of fighting." Unlike Greece, he had quit. I could not pry from any of these men any good reason he had for holding out.

Strolling through the company streets, I observed in each one some monument, shaped

like Parthenon or church, the voluntary self-expression of free men.

Returning to Athens, which had endured nine years of war, hunger, occupation, and mass execution, I found the Greeks enjoying a cultural revival.

The national budget, like many another, is out of balance, imports alarmingly exceed exports, one Greek in eight is either a soldier or a refugee, and civil war drags on in the maze of mountains which faces the Iron Curtain to the north.

But as I again walked the familiar streets, apprehension over the fate of my friends gave way to wonder at their spirit. In the serio-comedy of Greek life, gaiety and beauty again grace the stage. To a Greek, tragedy is something dramatists wrote, ages ago, although few Hellenes have escaped its pain.

Art flourishes. Greek painters turn out so much good work that it is difficult to keep up with the excellent portraits, clean water colors, and masterly oils of native life or milk-white church domes by a cobalt sea.

Taking Tea with a Dryad

Pageantry of village costumes and earth-shaking peasant steps are once more in full swing. Several dancing schools stage shows which enliven tired old ruins with visions of dryads or nymphs. It was a memorable experience to take tea with a girl whom I had seen a few days before as a lightly clad figure freed from a time-old pose on some ancient urn.

One Monday night, in summer, within the ancient walls of the Odeion of Atticus Herodes, I sat with 3,000 people on the south slope of the Acropolis and listened to symphonic music by Mozart and Schubert, and by such modern Greek composers as A. Nezerite, G. Poneride, G. Lekeu, and George Sklavou.

Above us, at the edge of the Acropolis, a corner of the matchless Parthenon thrust a shoulder of sun-tanned marble against the velvet sky (page 728).

Flower shops, stooped under the Parliament ramp beside Sofia Boulevard, again glow with dahlias and marguerites, gladiolas, and "red-hot pokers." Candy and pastry shops seem as luxurious as ever, especially when one sees the prices.

Constitution Square is still divided into palm-shaded gardens, kept green with precious water, and a vast empty space which suddenly sprouts tables and chairs when the summer sun goes down (page 714).

After the heat of the day, neatly dressed children are brought here by proud parents. Male groups meet for political argument, prefaced by the inevitable, "Now if I were Prime Minister . . ." However much Greeks love Greece, Constitution Square orators always seem to belong to the Opposition!

Waiters Dodge Through Traffic

This open-air forum is "provisioned" across three of the busiest streets in Athens. Each thimble of hot, thick coffee; each accompanying dewy glass of water; each sugary pastry; each heat-smoothed cone of ice cream is carried through a maze of buses, trams, private cars, and jaywalkers by waiters who must lead charmed lives. I know some who have survived 20 years of traffic-defying tray carrying.

Slow service is quite in keeping, for people gather here not to eat but to sit. With each bottle of pop one has the right to an evening of gossip or philosophy.

At our roof garden one hears comparatively little Greek, for Athens has acquired an American accent.

Most of the offices of the ECA, which administers American aid under the Marshall Plan (page 718), are in one of Athens's largest buildings, on the site of the former Royal Stables, bounded by America, Venizelos, Jan Smuts, and Winston Churchill Streets. An Army post office brings Greece within two days of Washington by air mail. A post exchange occupies one busy corner. On another corner is a snack bar, serving doughnuts, chocolate malts, and a second cup of coffee free. At the commissary, wives of members of the American Mission for Aid to Greece and of the ECA buy frozen chickens, California oranges, and graham crackers—just like home.

Such arrangements prevent American visitors from depleting local food markets. Since purchases are paid for with military script, no burden is placed on dollar exchange.

Clean, spacious Mission buses run to seaside Glifadha or shady Kifisia, in the cool lap of Mount Pentelikon (Pendelikón), where many of the hotels and houses are leased to Americans at generous rents.

Famous Landmarks Intact

Omonia Square, Athens's Place de la Concorde, has known violence, but I found my favorite landmarks intact. Friends about whose safety I had long wondered greeted me as if nothing had happened since National Geographic photographer Stewart and I worked in Greece in 1939.

Around bright flower beds in the National Garden, so recently a death-haunted potter's field, nursemaids and soldiers flirt as of yore.

Rain Deluges Constitution Square. Athenians Appear to Walk on Water

An English-language sign, "Save the children of Greece from abduction," protests the Communists' seizure of youngsters for indoctrination within the Iron Curtain. High on the misty Acropolis stand the 2,400-year-old Parthenon (left) and the Erechtheum (pages 715 and 728).

At a Near East Foundation playground, equipped with funds from A. A. Hyde of Wichita, Kansas, happy-faced children sang like cherubs under the direction of a former orphan. Near by, 1,180 Greeks were shot down by German execution squads.

Papering the sidewalk kiosks are American magazines and plastic-bound books. Greece craves "food for thought," from Mark Twain and Hawthorne to hard-shooting Westerns and movie-magazine cheesecake.

At Eleftheroudakis's bookstore, a favorite haunt of my father before me, I got a bargain —E. V. Rieu's splendid translation of Homer's *Odyssey*, for 35 cents.

On Athens's Main Street, only three steps from the summer glare, the United States Information Service Library is crowded all day. "America" is a magic word. Here in such publications as tool catalogues, encyclopedias, the *U. S. News*, the *New Yorker*, and the NATIONAL GEOGRAPHIC, the U. S. A. is pictured and described.

Prize-winning photographs line the walls and pertinent—or impertinent—cartoons are shown, with the legends in Greek, so that no one will miss the point.

Here I saw an Orthodox priest with silky beard reading a magazine. When I returned with my camera, he had gone.

"Wait a minute; I'll get another one," said a librarian. And soon through the hot streets plodded Archimandrite Eftychios Papaioannides to add the dignity of beard and robe to this popular meeting place (page 719).

Athens Loves a Parade

Athens loves a parade and the flash of banners. From my balcony overlooking Constitution Square I watched the Sunday procession of virile, skirted Evzones, of the King's Guard Battalion, on their way to the changing of the guard at the tomb of Greece's Unknown Soldier (pages 730, 731).

On St. Paul's Day I looked down on cheering crowds as the smartly uniformed King

Alfred Cook, U. S. Army Engineers

Americans Restore the 1,100-foot Brallos Bridge, Successor to Thermopylae Pass

This wild gorge was bridged when the Simplon Orient Express linked Athens with Paris and Istanbul by rail. During the war retreating Germans did a thorough demolition job. Col. D. W. Griffiths, U. S. Army Engineers, here addresses Greek officials at completion of the reconstruction in April, 1949 (page 721). Historic Thermopylae, no longer an important route, lies a few miles away.

Paul and beautiful Queen Frederika rode to and from the Cathedral ceremony.

Twice in recent months I heard the "Dead March" sound here as the massive Archbishop Damaskinos, onetime Regent and Premier, and frail Premier Themistocles Sophoulis, their coffins bare to the open sky, were borne past toward the grave.

Meanwhile, in the hornet-nest mountains of Epirus, Macedonia, and Thrace, some 200 miles away, the Army parades its heavy trucks as the armament of modern mechanized war moves along mined roads toward ambushed guerrillas. The menace of Stalinism, seeking access to the Mediterranean through Greece, brought America into the picture.

The Greeks saved Western civilization from Oriental despotism when the world was young. Now Greece, hard against the Iron Curtain, defends democracy and we give aid.

After talking with American Mission heads, I asked an old friend, in charge of field men, where I could accompany one of his legmen and trouble shooters on his rounds.

"How about starting with Crete?"

So I flew to Crete in an hour in a shiny DC-3.

Help from the skies came to Greece just in time. Roads were mined, bridges broken, through road traffic suspended. But silver-bright planes drone over friendly and enemy territory alike, preventing Greece from again becoming a group of isolated city-states, sandwiched between enemy-held hills.

Like flashing spokes around Hassani (Ellinikon) Airport, in the honey-scented lap of Hymettus, 15 TAE (Greek Air Lines) routes reach out to Alexandroúpolis, Komotiní, Kaválla, Salonika (Thessaloniki), Vólos, Larissa, Kozáni, Ioánnina, Agrinion, Tripolis, Kalamata (Kalámai), Khaniá, Iráklion, to Egypt's Alexandria, and to Rhodes (Ródhos), capital of the long-Greek, but newly rewon Dodecanese.

Athens is the focus of many foreign air lines, but without its own planes Greece could hardly function as a unit. The loan which the ECA arranged for TAE was to have been paid in 36 months. Instead, it was paid in full in eight.

Athens an Air-line Center

Greek Air Lines has about 20 flights a day from Athens and about 45 a week from other ECA-built fields. Hellenic Air Lines has about half as many.

The man in front of me during my flight to Crete had flown before. His wife, just as obviously, had not. His chivalrous solicitude, as he showed her how to adjust safety belt, ventilator, and seat light and, with exaggerated jaw movement, how to "swallow altitude," was a joy to watch.

Two-hundred-and-thirty-pound tireless John Asher, ECA field representative, pretty well dwarfing his jeep, met my plane near Khaniá, and we were off for a conference on automotive transportation. The long road along narrow Crete brought out the stuff we and our jeep were made of. Along or above it, we bumped doggedly on from Khaniá to Saint Nicholas (Áyios Nikólaos).

Asher, who had ministered to thousands of refugees on their return home when the Peloponnesus was freed, found Crete "tame." I found its transportation as wild as in 1939.*

New buses had already been landed in Crete. A few weeks later road building was to begin. As fast as the roadmakers advanced, the buses would follow. For the moment, John Mickam, ECA automotive specialist, was meeting the operators, listening to their problems, and acting as their contact man with the authorities in Athens.

"You're going to have compulsory inspections, twice a year," he said. "When your bus or truck has been inspected, you'll know that it's safe. Dangerous vehicles will be taken off the roads."

In Athens, 180 ambitious young men build aluminum bus bodies on American chassis during half of each day. The rest of the time they study the theory of mechanics, shop procedure, and mathematics.

One new bus leaves their hands every day. Tumble-down buses, common when I arrived, have almost disappeared from the streets of Athens.

How much does a resplendent, soft-seated bus, its chassis built in South Bend or Detroit and its body built in Greece under American patents, cost the American taxpayer?

Not a cent.

When an operator's license is approved, he buys the machine he likes in the private market. What with transportation costs and taxes, he pays about twice as much as the same car would cost in Kalamazoo. What the ECA does is to change his drachmas into dollars.

The Greek money goes into a counterpart fund, to pay for roads, bridges, ports, canals, and other public works. But since Greece is fighting a costly civil war against Communist-aided guerrillas, much of the counterpart fund now bolsters a budget depleted by military expenditures and refugee relief.

Back in Khaniá, after a cross-Crete scrumble to study irrigation sites in the rich Messará plain to the south, we enjoyed a trip to Suda Island, at the entrance of many-wars-red Suda Bay (Kólpos Soudhás). When our launch grounded at Kalivia on our return, we were greeted with smiles and flowers.

Favorite son of Khaniá was Eleutherios Venizelos, World War I statesman and confidant of Woodrow Wilson. In memory of the Cretan diplomat his widow has built a splendid stadium, where we saw such athletic contests as the Greeks call "agonies." Well-muscled young men and shapely maids in modish shorts gave the Cretan capital a collegiate air.

In the home of G. S. Naxakis, author and alpinist, I made some Kodachromes of his daughter Iolanthe and her charming friend, "Helen of Troy" Nicolopulo.

Within Earshot of Guerrilla War

From peaceful Crete, hungrily anticipating the biggest olive crop on record, I went to the other extreme with a flight to Ioánnina and Kastoria over enemy-held hills. The towns still echo to the sound of civil war, but, cleared of guerrillas, serve as military bases and refugee camps.

Lt. Stephen Merrill, who speaks Greek like a native, accompanied me (page 733). At Ioánnina we were met by ECA field man Mike Adler, brimming over with ideas, who took us to "children's city," feeding station and refugee camp. The Paidoupolis, City of Children, is an all-too-frequent feature of Greek life. But they are wonderful havens for the homeless.

With its high-perched old citadel overlooking a charming lake, Ioánnina is the chief city of Epirus (page 740). From it Greek

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Crete, Where Sea-Kings Reigned," by Agnes N. Stillwell, November, 1943; "Cruising to Crete," by Marthe Gullé and Mariel Jean-Brunhes, February, 1939; and "Sea-Kings of Crete," by James Baikie, January, 1912.

Chris Wain from Kardous

Greek Army Recruits, Trained by a Kilted British Major, Climb Ropes Like Gymnasts

Ancient Greeks had a word for such a drill—agonia (contest or struggle) they called it. Anyone who has seen the contorted faces at the finish of a race will understand the derivation of our word "agony." Americans now guide the Greeks on strategic levels, but Britons remain on the job as army instructors.

Commandos make forays against ambushed mountaineers. To it flocked refugees and prisoners of war. Some are already homeward bound to their ruined villages.

In the prison courtyard we talked with some Amazons who had served with the guerrillas, but now were about to go home. A few had joined up of their own accord, but most were forced into guerrilla life.

In a splendid old estate the girls of the National Girls Orphanage were being taught to embroider, make dresses, cook, and keep house. The discipline and spirit were splendid, and a small scarf I bought carries happy memories.

Past a spot where guerrillas had held up a bus two days before, we rode down to see an experiment station where cattle herds are being improved through artificial insemination and swamplands reclaimed by draining.

The women were about to lunch, but I asked one of them to go back to weeding mangel-wurzels long enough for a picture.

"Count on a GEOGRAPHIC man to pick a pretty one," quipped Adler, after an appraising look.

Steve and I visited the museum in Ali Pasha's mosque, watched hundreds of hungry folk stand in line for a gob of macaroni and cheese, and rowed to an out-of-this-world island where half a dozen medieval monasteries dream away the hours.

Young Athenians Know General Marshall as the Architect of Their Future

Most Greeks realize that their hope for a free nation depends on the European Recovery Program outlined by former Secretary Marshall in 1947. Thousands stop daily on Winston Churchill Street to scan a billboard showing how the Economic Cooperation Administration helps their country. About $1.10 a year from each American provides $23 in aid for every Greek.

In one of them, by the flickering light of an altar candle, a wrinkled caretaker revealed one saint after another, while, high in the dome, a shadowy Pantocrator looked down (page 742).

Ioánnina Mud Stops U. S. Mules

With a farewell roar to Ioánnina our plane was off across mountains where guerrillas still hold out and occasionally take pot shots at pilots. From the air one can see why a six-by-six truck is useless for mountain warfare.

Not a road, not a path, not a spring or shelter could we see. Texas and Missouri mules can slog through snow and gooey mud; but within a few yards of the road they might as well be wearing high heels. This is a land of goats and mountain men.

In such mountains mechanized troops are outmaneuvered, much as were the crusading knights beside Galilee, when Saladin's light horse ran circles about them, and the sun of the Holy Land roasted European chivalry in its own breastplates. Mountain warfare is easy—to the man who isn't there. Recent victories have been dearly bought.

Mention "Kastoria" in Manhattan's fur district, or "New York" in Kastoria, and you are sure of an audience. Many highly skilled fur craftsmen learned their cunning in that lake-girt city near Albania (page 736).

Lieutenant Merrill and I drove up with our chins between our knees, for the jeep floor was heavily sandbagged against land mines. The King and Queen and Prime Minister Sophoulis had been here before us.

A Many-paned Window on United States Life Is the American Library in Athens

Hundreds of Greeks, to whom America is a magic word, go each week to the United States Information Service Library to read American magazines and reference books. Murals picture Jefferson Memorial at Washington, D. C., and other American scenes. Prize-winning photographs line the walls. A Greek Orthodox abbot consults assistant librarian Alice Crowley (page 744).

Mr. Vasilios Mellides, their host and ours, commutes between Kastoria and New York.

In a fine old house, its sagging floors and landscape-painted walls a relic of Turkish days, we saw how tiny scraps of fur, rejected by Manhattan's well-paid experts, are coaxed together into lustrous sheets, to be fashioned into a woman's coat.

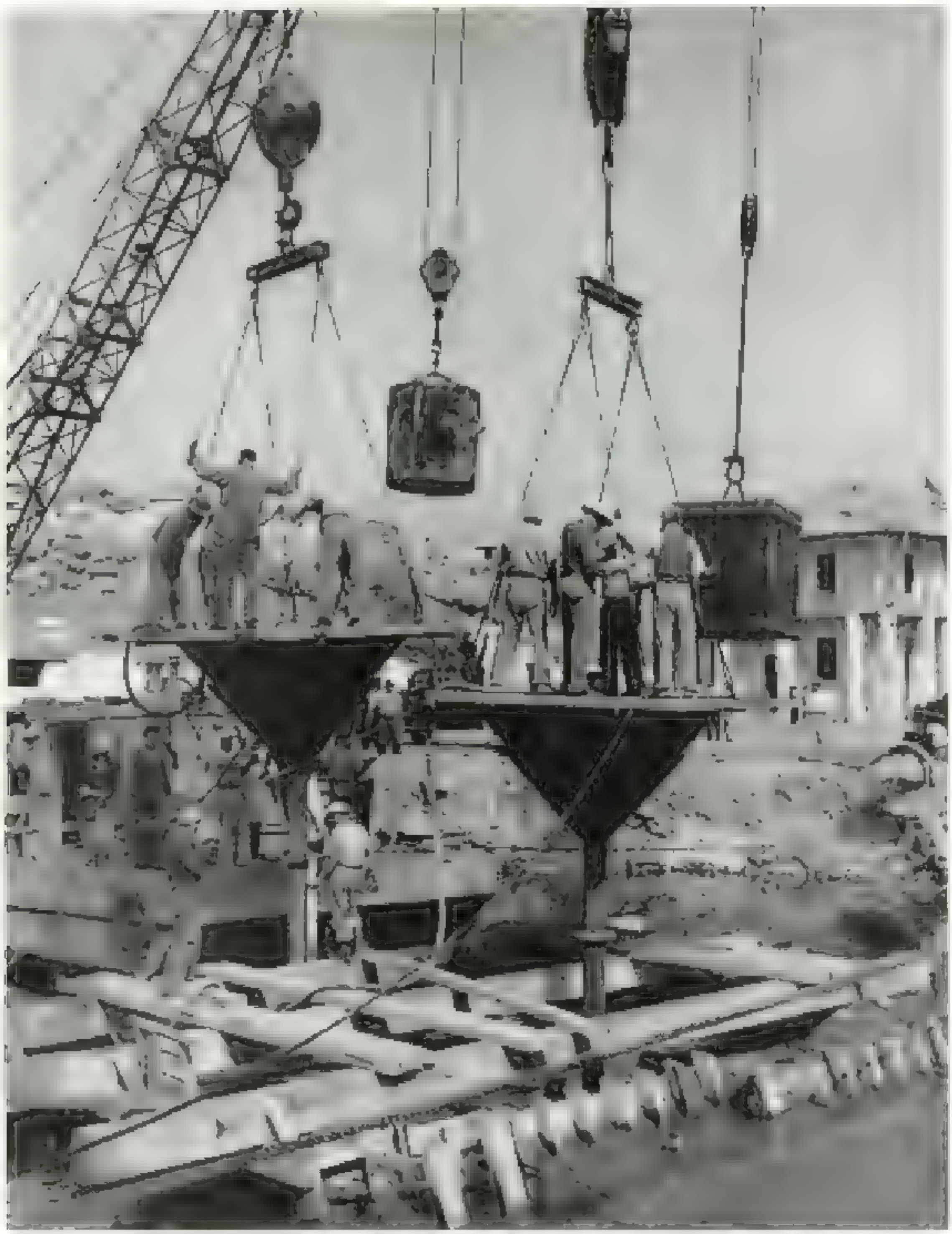
The pieces of which it is made may have come from widely scattered flocks in Afghanistan or Persia (Iran). They may have crossed back and forth between Kastoria and Fifth Avenue or Michigan Boulevard. But a rich lining hides the evidences of toil and skill, and the surface seems smoother and better matched than if made of whole skins.

The little girl who modeled for me caressed the rich mosaic of worthless scraps.

Perspiring profusely, I climbed into a plane to Athens. While shivering in my trench coat, high above the clouds, I decided to go to bed. But Laird Archer, Director of the Near East Foundation in Greece, invited me out.

Thus, quite by chance, I met Queen Frederika, German-born darling of wounded soldiers and little mother of thousands of orphaned children. Some of the children don't know whether they are orphans or not. Some do, all too well, for they were there when death struck.

While Mr. Archer paid a name-day call on Princess Helen, aunt of King Paul and mother of the Duchess of Kent, I waited outside, feeling that sports coat and slacks were unsuitable. But his forthright hostess insisted that I "stop being silly and come in."



Dozen the Hopper Dubs Water Goes Concrete to Restore Panama Harbor

Old friends who had helped me photograph the Delphic Festival in 1930* at once made me feel at home. Then I was escorted to a chair in the garden beside the glamorous and dynamic Queen of the Hellenes.

Plebeian Pop Like Royal Sherbet

Her Majesty was telling of a school in Lémos in the Dodecanese where young bandits are trained for a better life and where the newly freed islanders entrusted the Greek flag to these young men.

A guest had left his delicate crystal glass of sherbet on a stone bench and a pop was licking up the royal refreshments. Queen Frederika's dark eyes twinkled at this mischief, but it failed to interrupt her discourse.

Then cordially the Queen turned to me.

"I hope you will visit some of my camps," said this beloved mother, who has added so many foster children to her own (page 712).

"But I have, Your Majesty, at Iokasma. We visited the dormitory at the slumber hour. When I tried to photograph one bright girl frame in the end of her double-decked bunk I found nearly a dozen happy faces in my finder (page 744). Incidentally, you are ministering to my happiness also."

"How?" she asked.

"I am fond of music, operetta, theater, and cinema. But when I first returned to Athens and thought how cruelly Greece had suffered, it seemed selfish for me to enjoy such pleasures in a land where there is so much want. Then I found out what the Queen's fund tax ticket is and that I had the privilege of adding my two cents' worth to your charity. With that small ticket, which added so little to the cost, I felt that I had an invisible little guest beside me. After that, even a twice-seen movie seemed good."

To King Paul I risked an informal approach:

"You have had my sympathy, Your Majesty, ever since I saw you [illegible] in the sun outside the new Fisheries Laboratory during an interminable speech of welcome tendered you. As it dragged on, I asked a friend if I [illegible] thought so."

The tall, quiet ruler offered me a sherbet, introduced me to his friends, and laughed. "It's nice to have one's problems understood," he said.

I came away admiring the simplicity and democracy of these hard-worked rulers, on whose common sense so much depends.

Some schoolboy chestnuts, like Thermopylae, resist time's changes. Railroad builders, tunneling through the hills and tossing the 1,100-foot Brallos bridge across a wild gorge, long since made a museum piece out of Leonidas's once-significant pass. As the Paris-Athens sleepers of the Simplon Orient Express crawled toward Attica, 4,500-foot Mount Kallidromon hid Thermopylae from the passengers.

During World War II, British and German experts in dynamite and destruction, by wrecking the modern substitutes for Thermopylae's bottleneck, turned back the pages of history to where it was when Xerxes' Persians forced the pass more than 2,400 years ago.

My friend Al Cook had spent months, dodging land mines and toiling in heat and snow, to record the proud achievements of our Corps of Engineers. Besides rebuilding Brallos bridge and tunnels, they built 900 miles of new road, restored the ports of Piraeus (opposite page), Volos, and Salonika, and re-opened the Corinth Canal (page 734). Thanks to them, the caissons are again rolling along in Greece.

Mr. Cook generously gave me some of his photographs of the reopening of Brallos bridge on April 14 of this year (page 715). Soon after that, a special train, cautiously pushing a string of flats (in case some saboteur got careless with his land mines), crossed the rebuilt structure. From where ECA man Walter E. Packard and I watched it, the train was a toy and the mighty new bridge a spiderweb, almost lost in an immensity of mountain and [illegible]

Vacant Land a Challenge

Mr. Packard, a drainage and irrigation expert, was inducing rice to grow on alkali soil where nothing grew before.

The Sperkhios River, now a destructive torrent, now a sun-bleached river bed, has eroded fields, spread miasmatic swamps, and built up three miles of alkali flats between Thermopylae and the gulf. So much vacant land, in a country which must import food or starve, is a challenge to an agriculturist (page 737).

Ultimately, the wily Sperkhios may be dammed. Already, drainage ditches and irrigation canals are putting the water in its proper place. But we came to see a 100-acre experiment on fields flooded by motor-driven pumps.

The tender rice, planted only a month be-

* See "Festival Days on the Slopes of Mount Parnassus," 14 [illegible] in color by Maynard Owen Williams [illegible] "Macedonia, Thrace, and Italy's Aegean Islands" by [illegible]

Water! The Magic Word Lures Hundreds as an Irrigation System Opens Near Uloka

The [illegible] is part of a $125,000 project irrigating [illegible] the Alpheus, largest river in the Peloponnesus. Alpheus, for whom it was named, was the [illegible] river to pursue the fountain nymph Arethusa under [illegible].

[illegible] resemblance to [illegible] [illegible]. [illegible] small plane, Mr. Packard reports the [illegible] crop looks so good that [illegible] farmers expect 60 bushels to the [illegible].

Greece May Grow Own Rice

[illegible] of [illegible] Greece [illegible] the rice [illegible]. Its rice [illegible] to grow 1,200 tons of rice in 1949 and is [illegible] with the necessary [illegible].

It has [illegible] into open-air movies. Then rain [illegible] refugees [illegible] a [illegible] that housed 2,000 [illegible] was [illegible] through town. [illegible] come to [illegible] longer than [illegible] effort to [illegible].

Women [illegible] of different lengths [illegible] men [illegible] in the shade.

Around [illegible] towns [illegible]. A [illegible] made his own shelter of [illegible] those who share [illegible] even a curtain [illegible]

[illegible] of the Mediterranean [illegible] the Lausanne plus [illegible] small scale [illegible]

My friend [illegible] Knows [illegible] wiped out former boundary lines.

Shows that the Greek farmer [illegible] to live with his neighbors [illegible]

[illegible] the company [illegible] selling what [illegible] price. [illegible] cost of production is higher than the world price. Before [illegible] the Germans wrecked [illegible] and brought [illegible]

[illegible] Current income, higher [illegible] little. To have [illegible] starched [illegible] cuchumas. But [illegible] only 4,000. To [illegible] further de-[illegible]

American wheat [illegible] in Greece at [illegible] rest of native wheat. ECA [illegible] now sell it on board ship [illegible] will help lower [illegible] But [illegible] forced the [illegible] brought [illegible] successful effort to [illegible] small farmer [illegible] bushels of wheat.

[illegible] that this [illegible] Mrs. Mildred Schu[illegible] selecting [illegible] seeking [illegible] Greece [illegible] of the cost of [illegible] luxury [illegible]

The Author Sits in the Cradle of Hercules

[illegible]

Every perplexing problem is complicated by another. How to grow rice on alkali land is one; how to sell it in competition with gift rice from abroad is another. Shut off the imports? Children starve. Force the farmer to sell at less than cost? A nation starves.

Before the war, the average annual income per inhabitant in Greece was $90. In some ECA countries the victorious enemy saved all factories possible to work for him. In Greece, friend and foe outdid each other in wrecking everything in sight.

The once-profitable Greek merchant marine was decimated. Income from tourists and remittances from relatives in America are reduced. There is little, if anything, that Greece can do better than any other nation. But the matchless treasures of antiquity are important assets to attract tourist dollars.

Ancient Treasures to Lure Dollars

The ECA is paying refugee laborers to restore the Stoa of Attalus, which once looked down on the Panathenaic procession, in which sturdy athletes and pretty maidens, pictured to this day in priceless marbles, annually escorted a sacred robe to Athena. This ancient covered portico will serve as a show place for treasures found while excavating the Athenian Agora, between the Acropolis and Hephaestion. That makes the American taxpayer a partner of John D. Rockefeller, Jr., who long financed the Agora "digs" of the American School of Classical Studies at Athens.

In the nearby Painted Stoa, another ancient portico whose habitués were the Stoics, slavery was condemned 2,000 years before Abraham Lincoln. To this meeting place came philosophers from a world awakened by the tramp of Alexander's troops to hear the teachings of Zeno, founder of the Stoic school.

Farther away is the best preserved of all Greek temples. Its columns still stand. Its name has been lost.

To fans and train passengers it is known as the Theseion. Scholars call it the Hephaesteion, after the lame blacksmith whose followers have their forges close by. Even in Greece, Hephaestus, handy man of the gods, goes by his Latin name as Vulcan—cover of automobile tires. But Mr. Homer A. Thompson, distinguished archeologist, has given added proof that this temple also honored Heracles or Hercules.

Mr. Thompson describes how a sculptured torso, two female figures, a headless goddess, one slender hoof of a horse, and some obscure depressions and spike holes were clues to the theme of the ruined pediment.

No one, after hearing him, doubts that the scene was that of the ceremonies honoring Heracles for bringing back the golden apples of the Hesperides. Vase paintings indicate that, in this delightful labor, at least, the ancient strong man used charm rather than a club.

ECA Wives Turn Archeologists

On June 26, 1949, ECA wives hit a minor archeological jackpot in the digs. Alerted by two of them, I took my camera to their impromptu date with the ninth century, B. C., set for 4 p. m.

A 32-inch burial jar had been uncovered in the Agora and the top dusted off. Its contents, if any, were untouched when we arrived.

Archeologist Margaret Crosby, in a wide straw hat and slacks, warned of possible disappointment.

"When an archeologist calls his shot, he often misses."

Mrs. Evelyn Smithson, Bryn Mawr graduate and a freshman at field work, presided.

Inside a circle of scarts, nylons, and wedgies, Greek diggers slowly removed the 2,800-year old debris. After two graceful vases had been removed, the jar was detached from its bed, swaddled in burlap, and lugged to the Agora museum courtyard.

In the jar, under the cranium of a ten month-old child, were half a dozen delicate vases, all unbroken and each distinctive—a very successful find.

In his museum workshop, anthropologist J. Lawrence Angel was engaged in sticking together prehistoric skulls. His researches indicate that if the ancient and modern Greeks are part of the same race, they could be, as far as skulls go.

One ancient skull was in such perfect shape that the explanation seemed incredible:

"Must have been thrown down a well. Water doesn't rot a skull. It is alternate wetting and drying that turns poor Yorick to dust."

Hunter adds evidence that characteristics as well as skull structure, persist.

"We lost our bearings, as Zeus, I suppose, intended we should," said the dauntless Odysseus, alluding to Alkinoös. In Polyphemus's cave his men were "paralyzed by a sense of utter helplessness." Fatalism and a sense of helplessness are still problems.

A 1,000-mile Jeep Jounce

Merrill, who had a leave coming, has relatives in the Peloponnesus. I could get a jeep. He would act as mentor. So we had a wonderful 1,000-mile jeep jounce through territory

Hungry Children of Argos Get a Dole of Hot Sweetened Milk

[illegible]

[illegible] Saronic Gulf [illegible] crossed the [illegible] of Helios, and [illegible] Mycenae's Lion Gate.

We had lunch at the Restaurant of the Descendants of Atreus, [illegible] for generations. The waiter had [illegible] edition of C. T. [illegible] translation [illegible] my father had lent a hand. In the [illegible] with the pride of a host and [illegible] the [illegible] and [illegible] has shot [illegible] and led a sightly life.

"That Agamemnon! I take him everywhere and [illegible] the dolls. He [illegible] Agamemnon and the [illegible] Everywhere he say, 'Lovely, lovely, lovely.' He very polite man. But pretty soon his [illegible] speak different. They [illegible] Next way of saying thank [illegible] exclamatory.

Some Navarino "Frieds"

[illegible] the [illegible] and the well-preserved [illegible] at Nauplia. [illegible] and held for many [illegible] propaganda [illegible] lighthouses, to use an alphabet, and to show [illegible]

A fine new road hairpins over the hills between Argolis and Arcadia. Near Akhladhokambos we passed a series of rock crushers, screens, rock heater, and asphalt mixer.

Here busy road builders are helping motor traffic to triumph over the very hills which yield the stone.

Some new roads were built when war demanded haste, and its consequent waste.

"You might as well toss blacktop into the fields as to try to build a road in a driving rain, but that's what we did," one frank engineer told me. The new road near Akhladhokambos is so good that truck drivers can't wait for it to cool.

Batteries of crushers "made little ones out of big ones." Bulldozers shoved the grader stone toward the chutes. High-pressure flames dried and heated the stone, which was then mixed with asphalt and emptied into trucks. Two loads a minute set out for the massive machine which rolls slowly ahead over a bad road and leaves a good road behind it.

At the peasant little city of Tripolis, Brig. Gen. Thomas Pentzopoulos, who had freed his area of guerrillas, arranged for a scout car to accompany our jeep through Tayetos. Across this nearly 5,000-foot barrier the sparta to Spartans, 2,500 years ago, enslaved rich Messenia. On the mountain slopes defective babies were left to die.

Over the makeshift but adequate road, which the Army pushed through while fighting off guerrillas, a constant stream of heavy trucks was using this unfinished short cut between Messenia and Laconia.

Bashful Bandit Surrenders

Near the top of the pass we saw the silhouette of a "bandit": a fearless but bashful lad with a most antiquated machine gun.

His brother, being those tangible embodiments of all Greek aliens, "the politicians," had "gone Communist." When something happened to him, his inoffensive brother surrendered, perhaps out of loneliness. As he was interrogated by his captors, there was no ill will on either side.

When Spartan warriors conquered the Messenian plain, Sparta became the most powerful city-state in Greece. Now American draglines are reclaiming worthless portions of once-rich Messenia.

We saw men dragging the rice fields in true Oriental style, and Kalamata's fruit and vegetable market oozed vitamins.

As we approached Arfará, I asked my mentor if he had let his relatives know he was coming.

"If I had, they'd have killed the fatted calf," he replied, chuckling.

In a simple but most hospitable home my companion had a small youngster on his lap most of the time. Four delightful daughters, after helping prepare the feast, put on their prettiest dresses, gifts from America.

Anna, the oldest, is a dressmaker, and Io and Maria help. Pansoiota prefers gardening. Such chum, in this dusty village, was like the flash of butterflies, but I slipped away to the village school, crowded and understaffed, where the village priest and schoolmaster expressed his thanks for milk from America.

Women and Donkeys Carry Water

Despite Arfará's position between two mountain streams, its water is brought in by donkeys or women. One Greek American said that he has to walk down to the river to wash his feet and when he gets back they're dirty again.

"Everybody goes to church," I reminded him. "Why don't you gather the men together some Sunday after service, go up one of the streams, sink a wine cask, get some pipe, and have yourselves a water system?"

"The politicians would not like it."

"Invite 'em up, have them inspect the wine cask, and push 'em in."

When I mentioned the matter to an ECA expert, he took down the name of Arfará and said:

Maybe we can do something. If we start, your friend will help. But these people have [illegible] ment." Cooperation is ECA's middle name. Maybe running water *will* come to Arfará.

Our lunch was ample, delicious, and gay. Of Merrill's cousins I retain many pleasant memories and one poignant one.

Taking Merrill aside, our host pleaded, "See if my brother won't have one of my girls go to America."

I thought what a blessing such a neat little housekeeper, cook, and dressmaker would be to a tired American housewife. But the Greek quota of 310 annually is filled for years to come.

Back in Tripolis, after a dipsy-doodle road, we were guests at an outdoor dinner given by General Pentzopoulos. A Gypsy singer had been asked to bring her guitar. As one delirious course followed another, her notalgic melodies, now a moan, now a cry of defiance, colored our conversation.

The mind of Athens beside me was novelist, painter, classical dancer, and very good company. Across the table a bald general echoed each melody of the Gypsy guitar.

Dark-eyed Maids in Ancestral Dress Roll Back the Years, Medieval Greece Stands Revealed

[illegible] Tract

Refugee Children, Greece's Future, Parade Beneath the Crowned Parthenon, Crowning Glory of Her Past

Greece Weeps at Yankee Book — Peddler's Stand and Mule Cart Bear Soap To Sixteen Boxes Canned Milk To Hundred Boxes

Skirted Evzones Dress Like Bellhornes or Lightning Lunges

Protestors Clash with Students Pattern Marching Past Construction Site

[illegible]

Ilissy, Mussle Collectors, Dark Eyed Jesus, Wasp Cats, and Purple Mountain Compose One of Athens's Loveliest Views

[illegible]

No Sullen Pouts, No Jaded Appetites, as Happy Smiles Greet the Daily Ration of American Milk in Athens

Greece's Edelbac Is Bass on the Lobe Aqueract Engineers Have Restored the Corinth Canal

Greeks Are Great Sightseers . . . Trade-Unionists Mass Their Crowns Before the Unknown Soldier's Tomb in Athens

So Peaceful Seems Kosovo Between Lake and Mountain that No One Would Guess Its Days of Deadly Fear

[illegible]

Goats Having Eaten Farmer's Young Forests, Denuded Mountains and Despoiled Farms, Here Graze a Wasteland

On Makronissi, an Idealized Proving Ground, the Greek Army Turns Communist Sympathizers into Enduring Patriots

Greece's Crown and Shield—Left and Right: Flag Are Sturdily Guarded by the Emperies Returned to Makronisi

Jerusalem, Which Seems To Sleep in the Sun, Actually Swarms with Refugees—Deadly Battles Have Ravaged the Countryside

Sturdy Greek Women Tilling the Soil and Breaking Roads Work Like Trojans and on Occasion Fight Like Amazons

A Wrinkled Sexton Lights a Medieval Monastery: [illegible] Spring Shut of Darkness

Motoring to Kalávrita, we came to Kato Klitoria, 85 percent destroyed. But the town ignores its plight. Backgammon players offered us coffee as if they were in a swank club. Kids came back from school past a headless Roman statue, no more ruined than the town.

In the Monastery of Ayios Lávros I found my 20-year-old signature in the guest book and again photographed the religious banner which Germanos, Archbishop of Patras, raised in revolt against the Turks on March 25, 1821.

I had remembered the City of Beautiful Fountains (Kalá Vrýsi) as a place of leisure, the sound of church bells, and peace. But German and guerrilla change all that.

A small white marker in a hillside meadow shows where the Germans machinegunned approximately 1,100 Kalávritans on December 13, 1943. Later, guerrillas burned the town.*

Part of my bedroom wall was gone. My bed was hard. The only wash place was the drippy faucet of the fire-wrecked kitchen. Asking myself why a lover of comfort persists in being a wanderer over the face of the earth, I slept better than in Athens.

We jeeped down to Patras (Patrai) along the oleander-tinted coast of north Peloponnesos, and back to Old Corinth's ruins, which St. Paul knew, and to Athens, where he preached.

Harnessing Edhessa's Water

To see one of the engineering projects designed to spread light, power, and irrigation, and save coal, I flew north to Salonika, city of the Thessalonians, and motored up to the waterfalls of Edhessa, once the capital for Philip of Macedonia.

Here, in a magnificent amphitheater, an assassin's dagger, deadlier than Demosthenes' philippics, laid Alexander's father low. But of more present importance is the fact that Edhessa is what its Slavic name suggests, Vodena, Place of Water.

The city peers over the edge of a 250-foot cliff, overlooking a wide and fruitful valley. From the sharp edge of town, sparkling waterfalls seem like wind-blown lace, their beauty soon to be sacrificed to hydroelectric power.

At Agras, higher up the valley, Ebasco Services, Inc., engineers are cutting a cote to see how much rock work will be involved in sinking a 1,200-foot tunnel and building a powerhouse deep down in the earth. From Agras the water will flow under Edhessa and be distributed through irrigation ditches in the valley.

As the hard-boiled drillers worked, pin-back-faced youngsters came to watch. Actually self-deprecating, the men asked why they could not set up a feeding station under the supervision of the United Nations International Children's Emergency Fund. With that much interest shown, it was a case of no sooner said than done. Now along with telling how many feet of travertine core the day's work has produced, the men boast of how much brighter the kids' eyes are (pages 725 and 735).

In Macedonia "Farming Country"

Unlike much of Greece, Macedonia is "farming country." In a Salonika suburb Charlie House is carrying on the world-famous American Farm School started by his father. West of the city, the Foundation Company, of New York, using giant American machines transformed mosquito swamps into prosperous farms. During three months in Greece I did not hear a single mosquito.

I wanted to see Slavic-speaking Greeks reoccupy their villages near the Yugoslav frontier. But another push was on. Military trucks crowded the roads. So we sped back over a splendidly repaved portion of the Via Egnatia, ancient highway from Durres to Byzantium.

Scattered stones around "Alexander's Fountain" mark the site of Pella.

Seeking new worlds to conquer and divinity in Egypt, only to find premature death by the waters of Babylon, Alexander turned his back on Pella, and it looks it. Yet here Euripides wrote some of his famous plays.

In the plain near vanished Pella threshing crews were at work. Power stackers smudged the blue sky with golden chaff while the grain filled fat burlapped sacks. Since refugees from Anatolia arrived in 1923 and swamps were drained, this part of Macedonia has become a bread basket.

[illegible] expert with the United Nations [illegible] miserable villages where children had not yet experienced the benefits of his work. Our lunch in a provincial "country store," consisted of cucumbers, good peasant bread, and six fresh, tasty eggs apiece.

The Hospitality of the Poor

To eat so bountifully in so poor a village seemed sinful. But one cannot refuse the hospitality of the poor.

Our visit was not entirely a drain on the country, for my companion arranged for feeding committees and promised some sugar to

* See "Epidaurus, Treasure House of Greece," by F. G. Renner, NATIONAL GEOGRAPHIC MAGAZINE, December, 1947.

† See "Hot in a Greatest Task," by Melville Chater, NATIONAL GEOGRAPHIC MAGAZINE, November, 1948.

The Photographer Aimed at One Model. Up Popped Ten Tousled Heads!

[illegible]

[illegible]

Tallest Pole A Man from American College

[illegible]

Exploring Stone Age Arnhem Land

By Charles P. Mountford

[illegible] in cooperation with the Australian Government

[illegible] Hassell Walker

A STRANGE world below our plane unfolded like an ancient chart on weathered parchment. Scattered rains and mist blurred brown watercourses, swathed soggy green plains, and beveled gray edges of sharp escarpments. It seemed almost unfair to fly with such ease over country where so few white men dared to venture on foot. Hundreds of feet above Arnhem Land one could feel its inhospitable vastness and infinite emptiness.

Scarcely scratched by European exploration, Arnhem Land, an aboriginal reserve about the size of Maine, lies in northern Australia (map, pages 748-9). Except for the ever-spreading influence of widely spaced Christian missions, it remains blackfellows' country with a Stone Age look.

Here nomadic natives follow their age-old customs. In small groups they hunt with spears over the black-soil flats, among the monotonous eucalyptus forests, and in steep-walled gorges of the stony plateau. In primitive dugout canoes they fish off the coast, gather food in the swamps, or along the many tidal rivers.

Often the aborigines hold an all night *corroboree* (tribal song and dance), their painted bodies flashing grotesquely in the firelight. And sometimes there spears fly in a fight to the death over women.

In early April, 1948, two Catalina flying boats moved the majority of our expedition staff from Darwin to Groote Eylandt in the wide Gulf of Carpentaria. A supply ship followed with three more members, the bulk of equipment, and food supplies.*

Aborigines Studied in Natural Environment

Ten Australians and five Americans made ours the largest purely scientific expedition ever to take the field in Australia.

Original plans called for a much smaller group. However, through the personal attention of the Commonwealth Minister for Immigration and Information, the party expanded. The Honorable Arthur A. Calwell was anxious to further collaboration between the scientists of his country and the visiting ones.

As the story unwinds, you will meet the members; so we won't herd them all on the stage at once (page 760). The National Geographic Society and the Smithsonian Institution (both of Washington, D. C.) and the Commonwealth Government of Australia sponsored the international expedition, hand-picking their respective representatives for the comprehensive eight-month survey.

Main objectives were to observe the everyday life of Arnhem Land aborigines; try to determine where they originally came from; learn how they coped with their own environment; collect specimens of their material culture, such as spears, throwing sticks, mats, and baskets. No less important was the task of recording mammals, fish, birds and plants in the region.

The scientific departments helped one another in the field. Naturalists supplied anthropologists with information on the natives' environment, while the nutritional unit judged how well aborigines lived off the country. No other expedition in Australia has embraced so many interlocking branches of anthropology, natural history, and medical research.

Three Main Bases

We divided our time in the field fairly among three main bases.

Our first camp, at Umbakumba in northern Groote Eylandt, offered an island environment with a generally arid, sandy hinterland.

Secondly, Yirrkala, in the northeast corner of Arnhem Land, et us study life on the seacoast as well as among fresh-water billabongs (lagoons) and rich eucalyptus forests.

Oenpelli, our final site, was some 40 miles from the sea; here the great stony plateaus of Arnhem Land rose abruptly from flood plains where extensive lagoons and marshlands teemed with fish and wildfowl and crocodiles lived in the writhing tidal rivers.

Although among the first areas of Australia discovered, Arnhem Land remains the least-known corner of this island-continent.

As early as 1606 a Dutch East India Company vessel penetrated 300 miles into the huge Gulf of Carpentaria to Cape Keerweer.

* See "In the Narrows, Government Mission Cruise to Some Are Arnhem Land," by Howell Walker, September, 1949; "An Arnhem Land Adventure," by Donald F. Thompson, March, 1948, and "Earth's Most Primitive People," by Charles P. Mountford, January, 1948.

A Bearded Ornithologist, Burning Midnight Oil, Works on a Crested Pigeon

[illegible]

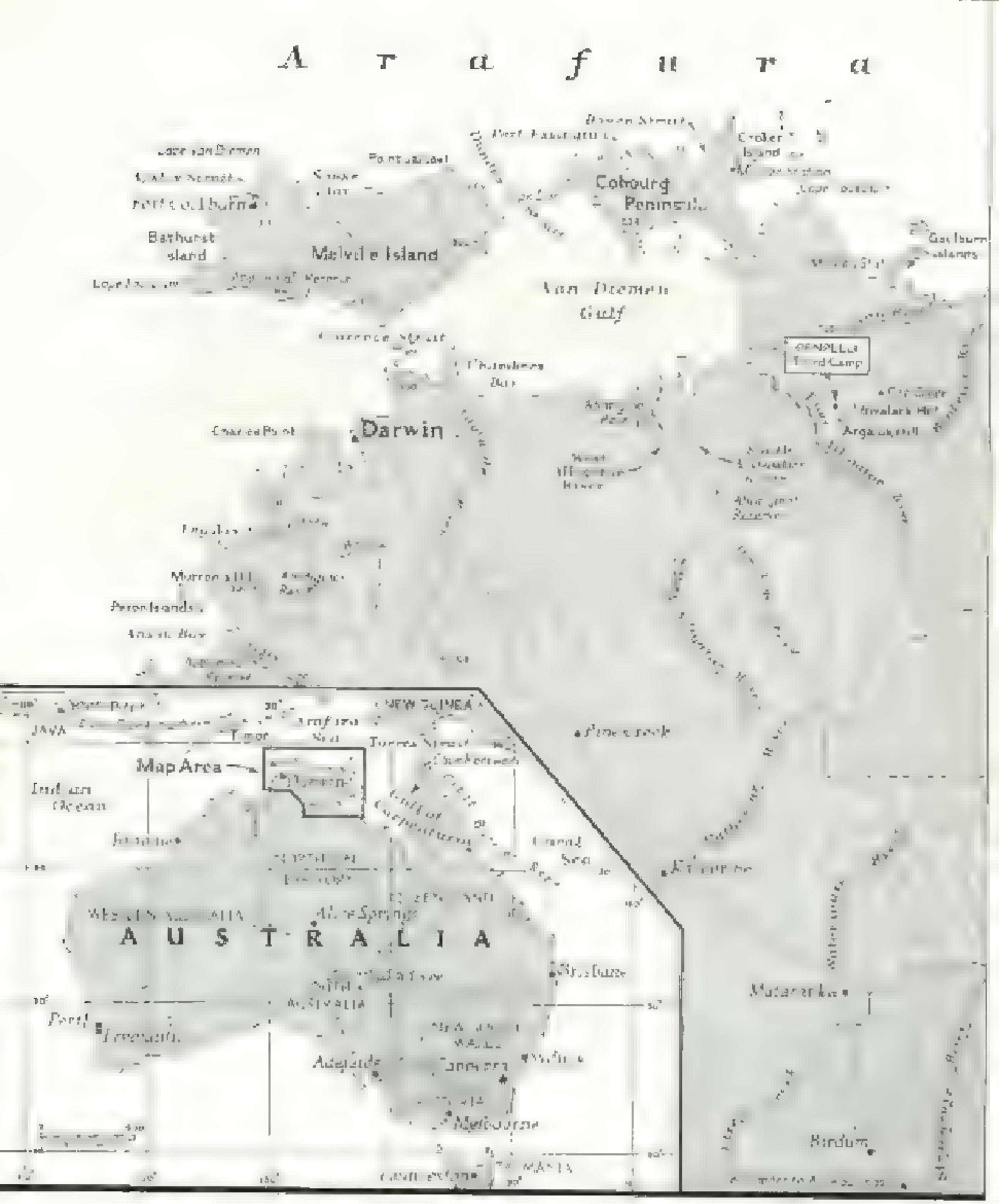
[illegible]

Living from Day to Day

[illegible]

The Expedition's Medicine and His Assistant Weigh a Female Patient

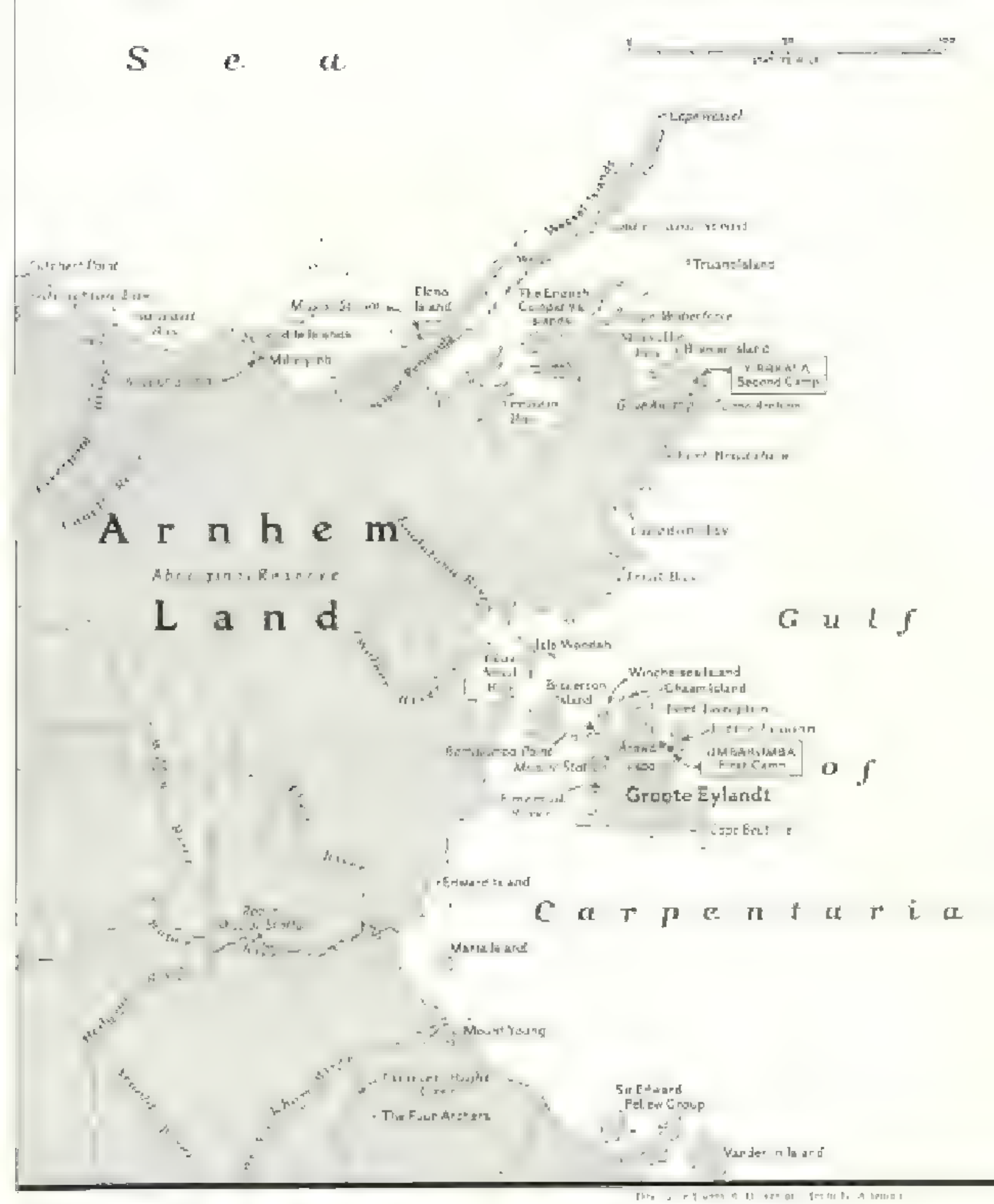
[illegible] Blake [illegible] produced a biochemistry book of the Australian [illegible] Northern Territory [illegible] the Oenpelli mission station [illegible] For [illegible] first, for they passed judgment on whether he [illegible] developed a [illegible] three main [illegible]



Arnhem Land Is Set Aside Like an Indian Reservation as an Aboriginal Sanctuary

major decisions. Women generally stay in the background. In their early years children appear hopelessly spoiled through parental indulgence, but with time they learn perforce to conform to their ancient tribal ways.

At Umbakumba, on Groote Eylandt, aborigines helped us pitch our tents on a sand hill beside the native settlement run by Mr. and Mrs. Fred Gray. Gray generously assigned us a dozen of his best blackfellows to serve as guides, fishermen, photographers, [illegible] musicians, and artists. Mrs. Gray through her home and the school she taught enabled us to make friends with some 50 boys and girls as well as with the exceedingly shy womenfolk (pages 753, 754, and 757).



Few White Australians Have Ever Seen the Rugged Face of Their Northern Wilderness

Because the expedition's radio failed, we could not learn the position of the supply ship *Pilcomit* en route from Darwin with most of the equipment and much-needed food. Only the mission station, some 40 miles away by road, kept Groote Eylandt in radio communication with the outside world.

As our food dwindled, I planned to walk to the mission, ascertain the *Pilcomit*'s whereabouts, and if necessary arrange for emergency stores to be flown in. This was done, and in due course supplies arrived.

During our first seven weeks in the field three of the American staff were not with us: Dr. David H. Johnson and Herbert G. Dulsman, both of the Smithsonian, and Howell

Walker of the National Geographic Society had decided to travel aboard the *Phoenix*. Ye poets of cat, Johnson and Deignan sought mammals and birds, respectively, and Walker local color.

With us at Umlakumba were the other two Americans: deputy leader Frank M. Setzler, Head Curator of Anthropology of the Smithsonian Institution, and Dr. Robert Miller, ichthyologist of the Smithsonian.

Setzler recorded more than 100 palm- and fingerprints, took hair samples, and made tests of inheritance of taste sensitivity of aborigines in the vicinity. These dermatoglyphic studies are the first to be made of natives in the area; they supplemented data previously gathered on aboriginal physical characteristics.

Frank also completed numerous facial and hand casts of aborigines (page 761). These casts were to be used for the modeling of life-sized groups in the U. S. National Museum at Washington, D. C.

"Leaf" Turns Into Fish

Miller collected fish by hook, seine, shotgun, night light, and the use of powdered derris root (page 760). Two species particularly interested him: a needlefish, locally known as "long tom," and the mudskipper.

The long tom is a surface feeder, related to the flying fishes. When chased by other sea creatures it rises above the water. With rapid vibrations of its tail and an occasional skip, it can scoot across the surface for 100 yards, and remain more or less airborne as long as 15 seconds.

Day and night Miller observed habits of mudskippers. These fish of the goby family are at home along the mud banks of tidal creeks and mangrove swamps. Puffing up their cheeks to provide a supply of oxygen, they can stay out in the air for 15 minutes or more at a time. Their eyes, set on stalks, move independently of each other—an exceptional feature among fish.

Once while studying the mudskippers, Bob noticed what looked like a brown leaf floating in the water. Although there was no breeze or current, this "leaf" obviously moved; yet it in no way resembled a fish. It took all Miller's speed and ingenuity to capture the "leaf fish."

The Australian contingent, too, had gone to work in various fields. One of our two female members, Margaret McArthur, went with aboriginal women into the jungle or along the beaches on food-gathering expeditions. When not occupied with secretarial duties, my wife sometimes accompanied the young nutritionist.

Margaret recorded crude native methods of using a stick to dig wild yams and other root vegetables; watched their preparation in coals or ashes of smoldering fires; saw girls submerge in swamps to come up with edible lily bulbs; or noted how mothers and children found crabs and oysters at rocky points on the coast. In every instance Margaret weighed the food, putting aside vegetable or fruit specimens to be dried and shipped south for analysis (page 760).

Dr. Brian Billington and biochemist Kelvin Hodges set up their laboratory in an abandoned shed behind the Grays' homestead. Here they examined dozens of natives to ascertain general physical conditions. Naturally shy of such things as hypodermics or blood tests, the aborigines, especially the women, presented problems. Brian always tested the older men first so that they could judge whether or not the white medicos practiced evil magic. Then patients moved more smoothly through the dispensary (pages 747 and 767).

We saw almost nothing of botanist Ray Specht during the daytime. With knapsack and ax he disappeared into the bush soon after breakfast; sometimes turned up for lunch; usually sat up late at night pressing plant specimens.

John Bray and Keith Corlett, cook and quartermaster, respectively, watched short rations get shorter, prayed for the *Phoenix* to arrive, and tried to make bully beef taste unlike bully beef. As honorary entomologist, John collected insects between meals (opposite page). Keith gathered shells along the beaches. Because their principal duties kept them close to the kitchen most of the time, both enlisted the aid of native women and children for field work.

Natives Form "Cockroach Committee"

The entomologist's assistants formed what we called the "cockroach committee"; as payment, adults received tobacco, children hard candies.

Keith's helpers carried no sacks, just tins to hold what they gathered; they were similarly rewarded.

Anthropologist Fred McCarthy of Sydney's Australian Museum studied the material culture of Groote Eylandt's aborigines. He watched native craftsmen fashion spears, throwing sticks, boomerangs, baskets, and ceremonial objects (page 773). Spending much time among native families, Fred also inquired into tribal and social organizations, learning who married whom, etc.

As ethnologist, my special interest was in primitive art. Through the kind cooperation

When Not Cooking, the Expedition's Chef Collected Insects, Lizards, and Snakes

[illegible]

Not an Advertisement: Just His Everyday Suit

[illegible] a flour sack worn finds another use. Elder Nemukwar of Umbakumba [illegible] turns the sack into a kilt [illegible] contact with white men [illegible] Most Australians carry back streets.

Fred Gray, I had at my disposal several aboriginal [illegible] they painted legendary symbols and figures in various earth colors with crude, [illegible] brushes. [illegible] a story behind it, the legends I recorded was told me by artists and older tribal members (page 759).

In addition to being the leader of the expedition, I had the [illegible] responsibilities of film director. With Peter Dawson-Smith, [illegible] I [illegible] and prepared [illegible] expedition [illegible] Morse code and keeping [illegible] pertinent [illegible]

[illegible] expedition radio functioning properly, native runners brought in a dramatic message from Groote mission station; our supply ship *Phoenix* had run aground on a reef somewhere off Australia's north coast. No one seemed to know quite where.

Two days later a [illegible] Johnson gave the steamship [illegible] and told that passengers [illegible] were safe.

Eventually, the *Phoenix* delivered our scientific gear and food in good order. With our party complete and all equipment on hand, the work of the expedition went ahead at full swing.

Various research groups set out for [illegible] camps. Fred Gray's 40-foot motor launch *Wanderer* took members [illegible] islands and to points along [illegible]

Mulka Fishing Camps Investigated

[illegible] Frank Setzler and [illegible] McCarthy [illegible] investigations at [illegible] Mulka fishing camps. Margaret McArthur, Ian Spoehr, and I [illegible] Bickerton Island. [illegible] continued southward to Groote mission [illegible] where Brian Billington and Kevin Hughes conducted a health and nutrition survey. Bob Miller went yet farther south to seek fresh-water [illegible] up the Emerald River.

Margaret McArthur observed a community of six aboriginal families living on Bickerton Island. She found that [illegible] went out every day in their dugouts [illegible] fish and turtles, returning home in the late afternoon to cook and to distribute their bag.

The women roamed through mangrove [illegible] in search of shellfish, or through eucalyptus forests to dig yams, and gather "sugar bag" (the [illegible] from [illegible] trunks or upper branches of trees. Energy expended in extracting the sugar bag, sometimes 40 to 50 feet above the ground, received their icing for one of the [illegible] on their menu (pages 772 and 773).

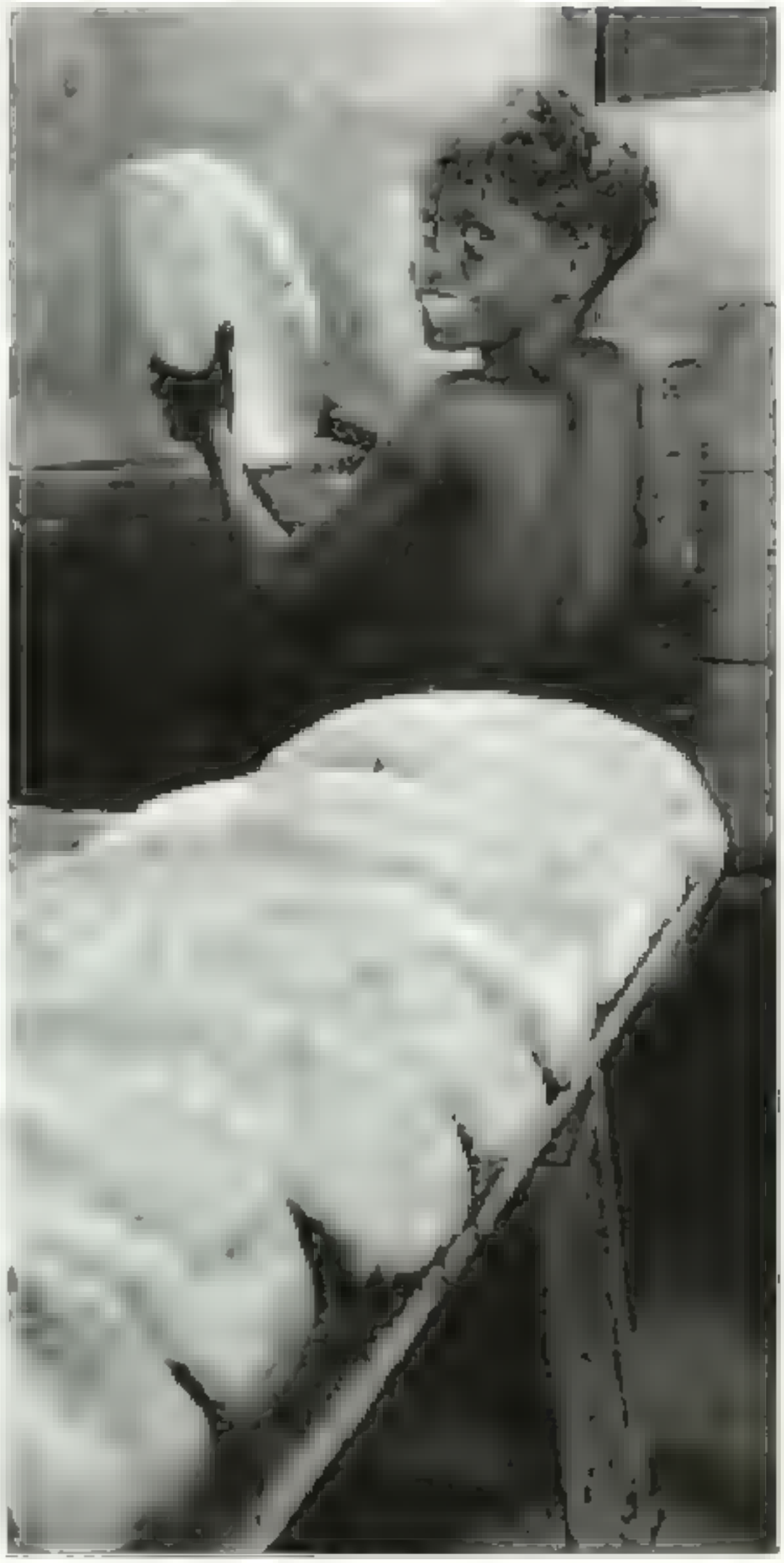
[illegible]

[illegible]

Same Old Trouble—Women

[illegible]

[illegible]



"Plenty Good Tucker Umbakumba," Says Lerrimaria

[illegible]

[illegible]

[illegible]

[illegible]

Setzler and McCarthy excavated the prehistoric [illegible] at Winchester [illegible]

[illegible]

Portsmouth Children of the Greene Extract Native Settlement Gather Each Evening for a Candy Hunt

[illegible]

to establish a chronology in Arnhem Land.

They crossed to Groote Eylandt and at Bartalumba Point investigated an aboriginal burial cave, previously located for them by Kolpin. This aborigine led Frank, Fred, and me along the rocky cliffs and up a narrow vertical cleft to a cave where many skeletons lay in complete disarray. Elements and animals had scattered skulls, limb bones, ribs, and vertebrae once carefully wrapped in bark.

[illegible] cave to a pile of bones. As he picked up a barbed wooden spearhead from the jumble of vertebrae, he recounted with glee how his father had killed the man in a fight because he was "proper cheeky fella."

"Him quiet fella now, all right," [illegible] concluded.

Aboriginal Stag Party

Soon after I returned to the base camp at Umbakumba, I arranged for Groote Eylandt aborigines (men only) to perform the most secret of their rituals, the *wanadja*.

The sacred ground, hidden deep in thick forest, was an oval shaped clearing smaller than a tennis court. Three bough huts close by stored ceremonial poles, meticulously carved and painted.

Membership of the ceremonial group was limited strictly to fully initiated men; no other aborigines were allowed on the premises.

With my wife as cook, Peter Bassett-Smith, Howell Walker, and I pitched our camp on a beach called Arawa. During the two-week ceremony we photographed the rituals with still and movie cameras.

Every day, and sometimes twice a day, the natives enacted ancient legends; in spirited song and vigorous dance they told of mythical serpents, turtles, sting rays, bandicoots, jungle fowl, and crabs.

We recorded many of the aboriginal songs—weird, primitive music that commemorates the epic deeds of giant creatures who lived when the world was young (page 779).

Caves Preserve Ageless Paintings

Meanwhile, Bert Deignan, ornithologist, and Dave Johnson, mammalogist, combed the Umbakumba area. Their hunting grounds included sandy ridges around Little Lagoon, small streams that entered it through mangrove-lined channels, wide swamps bordered [illegible] forests of eucalyptus with coarse carpets of low shrubs.

The *Phoenix*'s late arrival limited Deignan's and Johnson's time on Groote Eylandt. Nevertheless, during the few weeks they had there Deignan noted 50 species of birds and secured 70; Johnson collected more than 100 mammals, many of them never before recorded on the island.

Fred McCarthy made a quick visit to Chasm Island, just north of Groote, where Flinders and his artist, William Westall, had seen and copied "rude drawings made of charcoal and something like red paint." But Fred's short stay allowed him to sketch only a few of the many paintings he had seen. He was most anxious for a party to return with him to assist in recording the aboriginal art and also the fantastic beauty of the island.

Later the photographers, my wife, and I accompanied Fred to Chasm Island to sketch and photograph.

The island, about two miles long and somewhat less wide, looked like a mighty medieval fortress. Its precipitous walls and deep gorges would test experienced alpine climbers. Rising steeply from the pale-green sea, the cliffs had eroded into grotesque patterns or tumbled into tremendous jumbles (page 764).

On Chasm Island Flinders had noted a drawing of a kangaroo followed by 32 people [illegible] spears and another craft with 11 large fish attached to it by ropes, showing that even primitive artists sometimes could tell good fish stories (pages 762 and 782).

Aborigines Have Few Personal Possessions

None of our little group at Chasm wanted to leave the fabulous rock art galleries of this charming island; but our time in the Groote Eylandt area had run out. We had to pack up for the move to our next base camp at Yirrkala, 125 miles by sea to the north on the mainland.

And none of the expedition members liked the idea of saying good-bye to many aboriginal friends made on Groote Eylandt. With these natives we had shared various experiences, rough and smooth, but always valuable. Without ever talking about it, they taught us their calm philosophy; they simply lived it.

We had seen babies born into families living as our neighbors in bark huts. Black men, women, and children had shown us how happily they could subsist off the land with almost no belongings. Spears, throwing sticks, little dilly bags, and digging sticks were their principal possessions.

Until quite recently they had no permanent shelters as homes; casual windbreaks made of boughs provided their only protection while sleeping in the open. An empty flour sack converted to loincloth was sufficient covering

for the well-dressed tribesman (page 752). Women wrapped calico around their skirts and sometimes covered their breasts. Until six or seven years old children went quite naked.

One of our party applied to me for permission to stay longer on Groote Eylandt and complete his work among these natives; he pointed out that for him to leave would be like breaking off an interesting interview in mid-conversation. So Howell Walker, who arrived with the *Phoenix* seven weeks after the main body of the staff, said farewell and photographed the rest of us departing by launch and flying boat for Yirrkala.

The Royal Australian Air Force moved most of our personnel and equipment to a wartime airstrip (Gove) about four miles from the Yirrkala mission station.

Our camp near this mission turned out to be the pleasantest of all. We pitched our tents on the crown of a sand hill carpeted with a thick mat of dry grass, a welcome change after the yielding sand of Umbakumba.

Beyond our front yard swept a wide curving beach, where a crashing surf thundered day and night. In the "back yard" we had a fresh-water swamp shaded with large trees and fringed with luxuriant grasses. Here wound a creek of crystal water whose pools obviated the necessity of a bathtub.

And here in mid-dry season the weather was at its best. The early morning mists of July gave way to warm days, while nights stayed cool and refreshing.

Soon after we settled down in our new camp, the Northern Territory Administrator's patrol vessel *Kara* visited us. With it came W. J. Harney, generally known to us as Bill and to the aborigines throughout the north as "Bilarney." He joined the expedition as guide and adviser.

His knowledge of Arnhem Land, especially the coast of the Gulf of Carpentaria, is phenomenal; of the aboriginal people, deep and understanding; of the fauna and flora, remarkable.

As storyteller, poet, and singer, Bill amused everyone with his tales of the country, of [illegible] blackfellows; and he sang rollicking songs of stockmen or sailors.

Lone White Woman Remains with Blacks

Stopping briefly to pick up some of our members, the *Kara* continued 20 miles south to Port Bradshaw (not a port in our sense; just a large bay without docking facilities).

Here near the beach Margaret McArthur set up another nutrition camp. She wanted no other companions than two aboriginal interpreters, Mau and his wife, Ball; Margaret claimed she would get a truer picture of the natives in their natural environment if she were the only European present.

Margaret's decision to conduct her research alone was that of a brave woman. She had known her interpreters only a few days, and the aborigines in the area were complete strangers to her. Yet she stayed with those people nearly three weeks, observing their methods of gathering and cooking foods, and tabulating the quantities collected.

On her return, Margaret did admit she was not entirely comfortable when the *Kara* departed. For the first few evenings Mau entertained her with details of his part in the killing of some Japanese pearlers. Later she persuaded him "to stick to more informative and less harrowing tales of hunting and fishing."

Natives Ask for "Sakshin"

The aborigines at Yirrkala were most friendly and willing to help us. They laughed, joked, and sang all day. Not uncommonly a native would stroll over to the laboratory where Billington and Hewes worked, and ask for a "sakshin," their term for the vein puncture method of obtaining blood. Through their contact with Royal Australian Air Force doctors during the war, the blackfellows believed this a form of white man's magic that more than fed better.

As on Groote Eylandt, John Bray organized a "cockroach committee" at this second base camp. Two old blackfellows were trying to figure out why John went to all this trouble of getting insects, lizards, and snakes.

"May be," said one of them, "poor pickaninny belonga that white man, him hungry [illegible]."

Fred McCarthy did a unique piece of research in the field of string games (cat's cradles). Over the greater part of Australia the aborigines are expert in manipulating with complicated finger movements a long loop of string into some real or fancied resemblance to an animal, plant, or other well-known object. The game is played mostly by women and children, but men have a number of secret string patterns which females never see.

McCarthy had as his informant a young woman called Naraa, a positive genius with a single strand of string. She alone produced 80 different string figures. Only lack of time prevented Fred from recording an even larger number (page 750).

Soon after their return from Port Bradshaw, Seidler and McCarthy flew to Milingimbi Island, 135 air miles to the west of

Gnome Island: Bass Lock at Lauterbourg Lake in the Nimrod Gorge, Mt. Wazne

[illegible]

Merbala on the south coast. Here they investigated a series of shell heaps (middens) [illegible] up to 200 feet in circumference and 20 feet high. The two [illegible] into one [illegible] would contain [illegible] regarding the [illegible] of the aborigines of the north coast of Australia.

[illegible] H. Hanna, now in charge of the Minnesota Mt. [illegible], visited [illegible] in the excavation [illegible]. Two [illegible] were dug through the daughter [illegible] had been [illegible] fresh water springs. [illegible] water on the island was the center of all ceremonial and mythological [illegible].

[illegible] the trenches, excavated at [illegible] stone [illegible] were uncovered. Most important [illegible] were pottery [illegible].

[illegible] made in locating old Maori [illegible] were introduced by Maori fishermen. Although [illegible] worked in Sicily and Malta, [illegible] Maori [illegible] Anna Mary [illegible] [illegible]

Bark paintings done at Yirrkala fascinated me. In simple but beautiful designs they told of the mythical ancestors of the tribe and their doings of long ago (page 759).

In the late afternoon, when the aboriginal artists had finished their work, Bill Harney and I would sit among them, listening to stories they had illustrated on sheets of stringy bark. We heard of the women of Burabala whom everyone feared; of Muramura the great fisherman; of the Milky Way, of Orion, and other stories of the starry sky.

Leader Presented with His Own Coffin

Accepted as a member of the tribe, I received my place in its organization. According to the old man, my ancestor was Tjambul, the thunderman, a very important and somewhat dangerous character. The thunderstorm was his voice, the clouds and the rain the result of his power. Most important of all, it was he who sent the tiny spirit children to earth to become human beings.

One day the elders brought me a cylinder of bark painted with many strange symbols. This, they explained, was a coffin in which the bones of a dead man were interred after final burial rites. With shy smiles and gestures between themselves, they added that the designs belonged to my ancestors. In other words, it was my coffin! The aborigines regarded this as a good joke; to me it seemed rather gruesome. Nevertheless, I still have that coffin. One never knows!

We spent much time with the native children. They were so unafraid of us, so completely at ease, that Bassett-Smith and I decided to make a moving-picture film of their everyday life.

Full of fun and laughter, the kids quickly fell into the spirit of the thing. We photographed them paddling their tiny dugout canoes through rough water, playing their complicated string games, building odd figures in the sands or staging their childish ceremonies, spearing fish or bathing in the creek.

Dave Johnson wanted to capture a dugong, a herbivorous sea mammal inhabiting the shallow waters of northern Australia. The female (cf. the mermaid legend) clasps her single young tightly to her breast with one flipper when she rises to breathe.

The dugong measures up to eight feet in length; never leaves the water, for it feeds on submarine pastures of a sea plant known as dugong grass. The nutritious flesh of this creature resembles pork or veal; aborigines like it when cooked on coals.

Areas where dugong feed are well known and carefully scanned by the natives. At the first sign of floating grass, which indicates dugong "grazing" below, hunters slowly paddle their canoe to the spot and spear the animal as it rises to the surface for air.

Just opposite Bremer Island in the vicinity of Yirrkala is a sheltered bay where dugong grass grows plentifully. Here Maulin, one of our helpers and a noted hunter of the sea mammals, had got many. But their capture requires more than a quick eye and a skilled hand, it calls for a calm day—no wind and a still sea.

At last the perfect hunting day arrived. Maulin, with 14-foot spear, Dave with gun, and Peet with camera set out for the dugong bay. But when they rounded the point behind which the native kept his dugout, they saw the canoe paddled by several of Maulin's wives (he had many) well on the way to Bremer Island. The aborigine's language or that of the others was not recorded. I have never did see a dugong.

However, while at Yirrkala, Johnson captured 150 land mammals. It was one of the sights of the moonlit evenings to see Dave shooting at, and occasionally hitting, bats as they arabesqued overhead.

Often natives brought a kangaroo or wallaby into camp. These were occasions of rejoicing, first for Johnson, second for members of the expedition; for, after Dave had taken the skin, he passed the carcass to the cook. The fresh meat made a welcome change from the usual tinned food and an occasional fish.

Naturalists' Rare Find

Observations by Ray Specht and Bert Deignan seldom benefited each other, but the two naturalists shared one particular interest at Yirrkala. Bert caught a rare friarbird (so called because of the bald patch on its head) which frequented a scarlet-flowering mangrove. This tree, Ray later discovered, was as rare as the bird; it had not been previously recorded in Australia.

At Yirrkala Bert preserved 115 birds, collected 82 different species, while Ray added 285 species to his ever-increasing pile of dried botanical specimens.

Here Bob Miller also made a rich haul. A coral reef, teeming with fish, lay less than 200 yards from the cookhouse. Along this one reef Bob secured more than 110 different species.

In this work he had the enthusiastic assistance of the native people. Once he counted 35 of them retrieving the fish stunned by the action of powdered derris root. Bob had difficulty making the aborigines understand that very small fish were as valuable to him

Aboriginal Artists Explain Their Paintings to the Expedition's Leader

[illegible]

Under a Well-known Flag, Expedition Members Gather at Oropelli. Their Camp Stands Near the Source of a Large Lahar

[illegible]

In Northern Land He Makes Masks of Aboriginal Faces for Sands in America

When Did Aborigines Paint Chasm Island's Stenciled Hands?

[illegible]

Dark Hands and Pearly Souls Set Off Bangin Flea and Water Lilies

[illegible]

Sunlight and a White Man Reflect on Paintings by Primitive Men

[illegible]

Chusan Island's Rock-rigged Shores and Sparse Scrub Beaches Offer Colorful Lures for Both Aboriginal and White Visitors

[illegible]

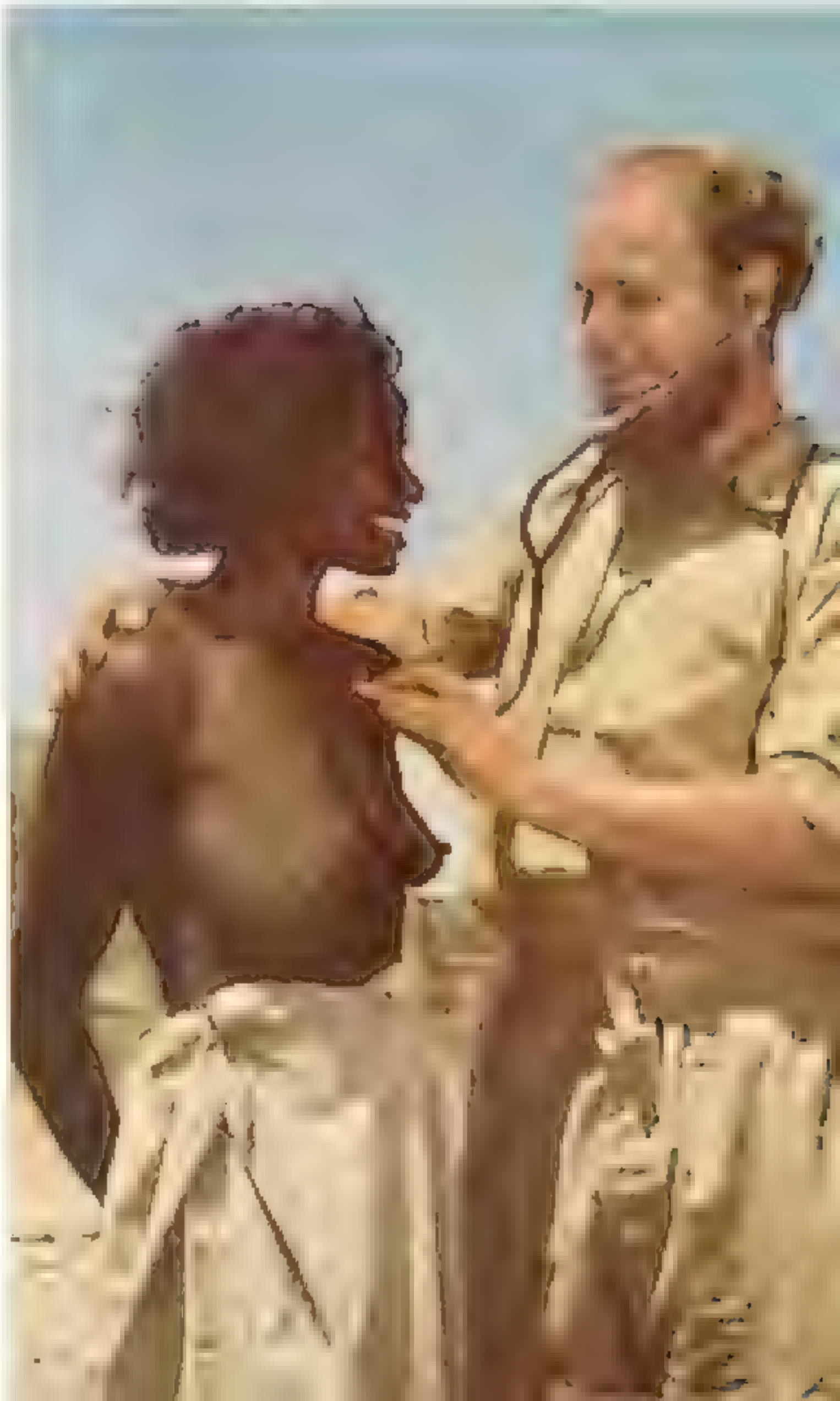
Gaily Colored Birds, Insects, and Fish of Genuine Exhibit Suggest the Variety of Aryan Land's Huge Natural Zoo

[illegible]

She We gas Name Beads with the Same Care Mother Gives to Baby's Beads

[illegible]

Neither the Cares of Motherhood nor Medical Examinations Can Banish Laughter from These Carefree People



There Lies Arabian Land—Inhospitable, Rugged, Hungry, Thirsty, and Still Little Known to White Men

From a hill near Dengali [illegible] Arab [illegible] Men. [illegible]

Primitive and Modern Nets Operate Differently, But the Catch Is Still the Same

[illegible]

Naked Natives Hop Like Kangaroos Through a Dust-stirring Dance in a Secluded Clearing

An Abyssinian Clitorial Blows a Primitive Trumpet, the Sacred Jump to the Rhythm

Aborigines Smeared Their Bodies with Pigments Clay to Illustrate the Tale of Rites

A Sacred Drum Gets a Coat of Many Colors, While a Dancer Has His "Buttons" Done Up the Back

Arthur Lund's Wind-tossed Wattle Trees Blossom Bright for Parade Scent Stalk

as the larger ones. Naturally, the big staff appealed more to his helpers, for they received any surplus.

A visit to a coral reef is always intriguing. The entrancing colors of the corals, the varied hues of sponges, the deep orange of some anemones, the indescribable beauty of the fish as they dart in and out, and the remarkable attraction of the anemones, or sea flowers, leave an indelible impression.

In form and delicacy of coloring the sea anemones are unrivaled even in surroundings of more than ordinary brilliance. They are well named flowers of the reef, for they bear more than a passing resemblance to blossoms; their tentacles wave like the petals of the land anemone from which they take their name.

The sea anemone captures its prey, usually small fish, by paralyzing it with its stinging cells. A strange partnership of the reef exists between anemone and too small, highly colored anemone fish, somehow immune to the sting of its companion. To capture its food, the anemone fish darks among the tentacles of the host until the prey passes within reach. With a quick rush he catches a small fish, drags it within range of the stingers, and holds it there until paralyzed. The anemone and its companion share the meal.

Natives Make Spirit of Sick White Man Happy

During the stay at Yirrkala our only staff change took place. Keith Cordon had to return to Adelaide, South Australia, because of his father's illness. John Bray took over as transport officer, and Reginald Hollow arrived from Darwin to become the new cook.

A day or so before Cordon's departure, Yirrkala natives on their own initiative held a *corroboree* (pages 770 to 773). This ceremony was a spontaneous demonstration to make, as they put it, the spirit of the sick man happy. At the end of the performance one of the blackfellows handed a carved message stick to Keith. The aborigine explained that markings on the baton were merely symbolic but meant to convey hope for the sick man's recovery.

At the end of August the motor launch *Wanderer* arrived from Groote Eylandt. Fred Gray brought Howell Walker back to the expedition fold. They had recently completed a journey up the Roper River, southeastern boundary of Arnhem Land. Reported missing for several days during this voyage, the *Wanderer* became the object of a search by planes from Darwin and a subject for daily news items from Radio Australia.

Gray and Walker explained that they had [illegible] for three days inside the Roper mouth until the Gulf of Carpentaria calmed down enough to let the *Wanderer* return to Groote Eylandt. It was this delay, unaccounted for at the time, that caused alarm when the launch failed to show up at Umbakumba.

Early in September we broke camp at Yirrkala and began the move in several planeloads to Darwin. From there we shipped out by way of Van Diemen Gulf and the East Alligator River to our third and last base at Oenpelli, 130 miles east of Darwin (page 760).

Two of our staff, Dave Johnson and Peter Bassett-Smith, elected to travel from Yirrkala by boat with some of the heavy equipment. Johnson disembarked at Cape Don to look for animals on the Cobourg Peninsula. Bassett-Smith continued to Oenpelli aboard the vessel.

In selecting Oenpelli, I had estimated that it would be the most spectacular, most productive, and at the same time most uncomfortable of our three research centers.

Our tents faced a large billabong, its surface spotted with water lilies and fringed with green grasses; on the far shore a eucalyptus forest spread to the 500-foot escarpment of the rugged Arnhem Land tableland (page 768).

It will be a long time before I see anything more stirring than the sight from our camp. Shortly after dawn a filmy mist crept slowly across the surface of the billabong, veiling and softening lilies on the water, the outlines of distant trees, and the reflections of the rocklike hill called Inyalark.

Then the mist changed from the soft, silvery grays of dawn to the rosy hues of sunrise, disappearing into nothingness as tropic sun rays fell on its ephemeral surface.

Nor were the late afternoons less beautiful. As the sun sank into the haze of bush fires, it glowed like a huge ruby and warmed opalescent purples of the distant escarpment with the ruddy tones of evening.

During the day, wide plains and rocky hillsides reflected the sun's burning heat; winds blew hot and dusty. At midday the temperature in our tents stayed above the century, sometimes reaching 107° F.

Oenpelli has four distinct physical environments, each rich in its own flora and fauna: the extensive swamplands; the open savanna woodlands; the black soil flood plains of the Alligator Rivers; and the forbidding plateau where cave floors hold relics of early man and cliff walls show primitive paintings.

There were birds everywhere: ducks on the water, jungle fowl in the forest, quail in the grass, and pigeons in the treetops.

Gogged Scientists Dig and Sift the Dust of Ages for Clues to Humanity

[illegible]

Each morning we heard the hooting of [illegible] serving specimens. Mosquitoes, beetles, and Australian [illegible] in great [illegible] formations. Harsh cries [illegible] gled in his luxuriant sandy beard (page 7[illegible]

[illegible]

[illegible] the feet of grazing [illegible] water buffaloes. The earth [illegible] recorded before in Australia.

One day Bert saw a rare owl [illegible] tiful Torres Strait pigeon [illegible]

A Robinson Crusoe in Modern Land Types His Notes and Loses His Bedroom Picture

Alas, Poor Yorick! Alas, Poor Setzler! Photographers Used Them Hard

[illegible] what the elements and [illegible] Tue Sta[illegible] [illegible] Water and shore birds flocked to Chenelli Lagoon [illegible] the [illegible] Australian stilts [illegible] various plovers; the [illegible] Burnelli's dove, and magpie geese. A [illegible] in the shallow marshes.

In deeper waters of the lagoon plovers [illegible] water lilies [illegible] on the lotus bird. [illegible] to walk on [illegible]

Father Fish Hatches Eggs in His Mouth

Soon [illegible] the end of the long dry season, marshes and billabongs were drying up; fish [illegible] the small permanent waters. The [illegible] well net. Bob Miller [illegible] crowding [illegible] Chenelli [illegible] water he had ever fished.

Here, too, Mr. Miller noted [illegible] fish, which holds the eggs of the female in his mouth until they hatch. During the period of incubation—about five weeks—the male, poor fish, can take no food.

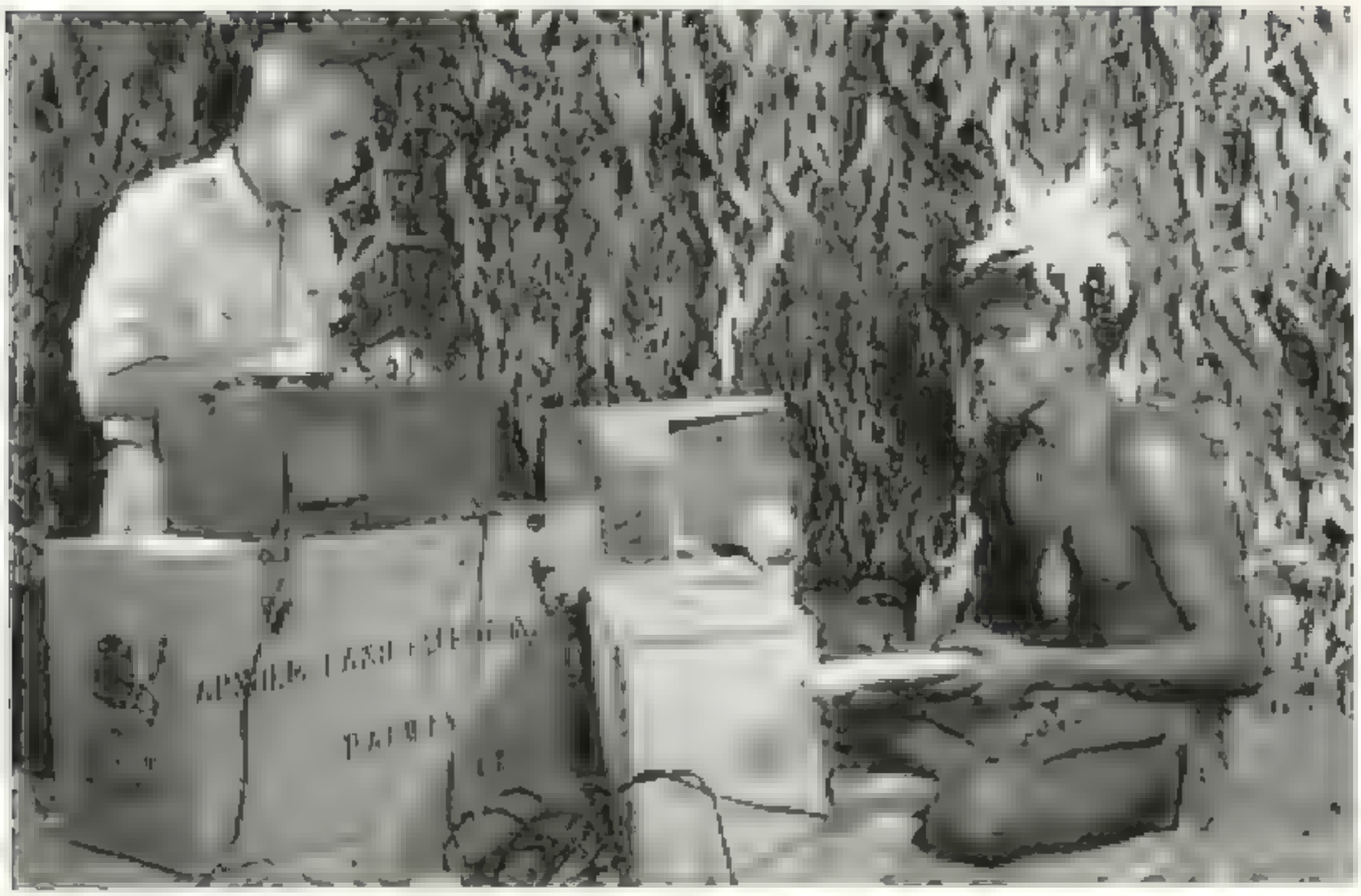
[illegible] not people that the father of a [illegible] his own offspring. However, we had [illegible] carnivorous fish [illegible]

Many interesting [illegible] to carry on this work [illegible] the first place [illegible] trade of [illegible] the meshes, and even a gray [illegible]

Although most eucalypts of Australia shed [illegible] attention to many the [illegible] trees of this family in the Chenelli area.

[illegible] Chenelli. There Fred McCart[illegible] John Br[illegible] Margaret McArthur [illegible] Fred went hunting with the [illegible] photographer [illegible] methods of [illegible] and spearing kangaroo, wallaby, and other game; John increased his insect [illegible] and Margaret enjoyed her first opportunity of investigating food habits of [illegible] living away from the sea.

Inyalark, the hill across the lagoon from our camp, was crowned with a bulgrinth of huge [illegible]



Music Waning but No Microphone Trouble Marks the Amateur Hour on Groote Eylandt

[illegible] who wears white cockatoo feathers, bears crow with sticks as he [illegible] beat [illegible] bandicoot, turtle, shark, or [illegible] kangaroo, all [illegible] tribal [illegible] gave him courage and frighten his [illegible] [illegible] it revealed a [illegible] man's dark [illegible] the wire recording in a stalk of eucalyptus bough

[illegible] Howell Walker, and I spent a [illegible] its great rocks, photographing a [illegible] cave paintings (pages [illegible] We camped on the bed to eliminate walking from the main base every day and to save time for photography.

Slept Next to Human Skeleton

Colossal stone slabs leaned against each other to form our shelter. Primitive paintings, many faced beyond recognition, [illegible] our walls. Within a few feet of where I slept [illegible] the scattered bones of a human skeleton [illegible] long ago for burial.

During the night we often heard [illegible] rock wallabies [illegible] native cats close by. [illegible] rapid with what's [illegible] to seek [illegible] food we dropped.

One evening Howell left an open tin of sardines on a [illegible] beside our camera [illegible] his camera, and waited. A native cat [illegible] sniffed out the fish [illegible] When the [illegible] even a look at [illegible] only when the [illegible] grapher moved his camera to within 35 inches of the last [illegible]

The cat soon returned to the sardines despite the recent disturbance. This time the bulbs went off right by his whiskers, and the cat took a back dive out of the picture.

Most attractive rock paintings were the [illegible] of birds, fish, and animals [illegible] in the characteristic X-ray art of [illegible] a technique in which the internal details of the creature—stomach, alimentary canal, and heart—are drawn as well as external features. A wave-form [illegible] of turtles, barramundi, kangaroo [illegible] subhuman figures covered some [illegible]

In the more remote caves we [illegible] of art. This, the native [illegible] maintained, was not the work of their ancestors, but that of a tall, thin bodied, mythical race called the "Mimi." No aborigine has seen a Mimi; these mysterious people with particularly keen hearing [illegible] when strangers approach [illegible] rock clefts, venturing abroad only on cold days, lest the wind break their fragile bodies.

The art of the Mimi consists largely of [illegible] drawings, almost [illegible] human [illegible]. Many are delightful [illegible] especially running and dancing figures

Naram, Composing Cat's Cradles, Can Tell 300 Legends with a Single Strand of String

[illegible] the native cat [illegible] black people to spend the annual six-month wet season there.

[illegible] Lull Setzler and McCarthy excavated former aboriginal cave campsites [illegible] Most prevalent material [illegible] was a crude quartzite scraper. Although this same type of scraper [illegible] Australia's first known [illegible] Stone Age [illegible]

[illegible] the [illegible] Australia [illegible] of [illegible] was [illegible] the gum protruded [illegible] quartzite scraper.

(The design of a man throwing a spear shows [illegible] resemblance to figures painted by [illegible] of Africa and Stone Age [illegible])

Found—A Complete Stone Age Hatchet!

For centuries aborigines had obviously used numerous caves in the hills and [illegible] the natural protection, the concentration of [illegible] wallaby, and of the native cat invited the black people to spend the annual six-month wet season there.

[illegible] Lull Setzler and McCarthy excavated former aboriginal cave campsites [illegible] Most prevalent material [illegible] was a crude quartzite scraper. Although this same type of scraper [illegible] Australia's first known [illegible] Stone Age [illegible]

[illegible] the [illegible] Australia [illegible] of [illegible] was [illegible] the gum protruded [illegible] quartzite scraper.

Here, at last, was one answer, undoubtedly *the* answer to how aborigines used these scrapers. Setzler had found a stone Age hatchet, handle and all intact!

The Australian Museum of Sydney declared this hatchet ado as one of the most significant archeological discoveries made in Australia.

[illegible] of the long ago. Here [illegible] tribal area [illegible] must have [illegible] for an all-day *corroboree*, called by [illegible] Painting their bodies [illegible] with [illegible] hues, they hopped like kangaroos, writhed like serpents, ran like the emu, fluttered like leaves in the "sugar bag," and swayed like trees in a wind.

The sacred Bullroarer drum, a six-foot-long hollow log, decorated with other patterns, [illegible] throughout the songs and dances [illegible] to 773.

Apart from entertaining and informing us [illegible] ceremony [illegible] Tribes, youths [illegible] full-fledged hunters, as men.

Away from Chinchilli, Dave Jackson works

[illegible]

Even with Sardines Under His Nose, the Australian Native Cat Seems to Smell a Mouse

Not a fussy, this marsupial (*Satanellus hallucatus*) has never been domesticated. Hunger alone [illegible] to a camp kitchen near Chenpelli. A flash shot [illegible] the cat, but the picture taken [illegible] three feet, sent him scampering. He [illegible] (page 770)

the Cobourg Peninsula. He covered much the same ground as did John Gilbert, the naturalist, in 1840. Dave wanted to obtain another [illegible]

Lonely Walk Through the "Never-never"

For three weeks Johnson roamed the peninsula, collecting 45 animal specimens. In early October I received a signal by radio from him; he planned a 160-mile walk to Chenpelli and expected to arrive in 12 days.

Now at the end of the dry season the heat was intense; streams were evaporating rapidly. Although I assumed that aborigines would travel with Johnson, I knew how easily one could meet with serious trouble for want of water in this country. One has to live in the "never-never land" to realize its isolation, emptiness, and dangers.

Bob Miller finished fishing and prepared to return to the United States.

Occasionally we had parties when we [illegible] drank to the other's health, sat down to special meal, and spent the evening singing folk songs and telling stories. As a farewell to Bob, chef Reg excelled himself. Halfway through the banquet someone called out "There's Dave!"

Coming slowly across the plain was the mammal-hunter; he carried a knapsack and his gun.

In a body we rose from the table and rushed out to welcome him.

"Where are your black boys?" asked Frank. "The white men just don't move in that country without them."

"What boys?" Dave asked blandly.

And that, briefly, was Dave Johnson: quiet, self-confident, fearless, and full of common sense. As he could not find any blackfellows to make the entire journey with him, he had set out alone.

He first plotted his course on a topographically inaccurate map (the only one available) and then navigated by compass.

When I remonstrated with Dave for tackling so hazardous a trek alone, he assured me the journey had been quite uneventful. He told of ample game and streams with water; and he could travel at his own pace. However, nobody but Dave will ever know the whole story of his adventure.

So Miller's farewell became at once Johnson's welcome. Merrily we sang the camp ditties, and Bill Harvey recited a poem he had that day composed about Chenpelli. Here's one verse:

A Frame of Sticks and Strings Helps an Anthropologist Copy Rock Paintings to Scale

[illegible] appears to be the work of children. But [illegible] the years of experience [illegible] Paul McCarthy [illegible] native art [illegible] kangaroos [illegible]

There was Monty chewing Mimis, [illegible] upon the trail
And Bert behind his whiskers, utter ape and dark and quiet
There was Bob securing leeches that were clinging to his knee
And Dave a shooting disclosed as they filter through the [illegible]
Mid the "muzzies" near the pool at Oenpelli
(Muzzies are mosquitoes.)

With Bob Millet's departure the rest of us realized how little time we had left together. Australians and Americans had lived for more than thirty weeks as one family.

Research work of the expedition resulted in a collection of 13,000 fish, 13,500 plants, 550 birds, and 400 animal skins; literally tons of ethnological specimens, bark drawings, and archeological finds; a mass of data [illegible] film and countless still photographs.

And with us we took away the simple conviction that the natives' attitude to the white visitors largely reflected the visitors' treatment of the natives.

First rains of the wet season speed up our move from Oenpelli in mid-November. Aborigines assisted in folding tents, making down cases, and shifting heavy equipment.

To reach the river landing we [illegible] seven miles over the plains before they became flooded. Here black men worked with white against time to stow gear aboard a large [illegible] rushed out. Down the [illegible] River we swept with the swift current, then headed for Darwin to keep an appointment with civilization.

Calmly, slowly, the Aborigines returned to their balmy life in Arnhem Land where haste had no place, where time never mattered, where tribal folk didn't reckon in days or years or even centuries.

Adobe New Mexico

By Mason Sutherland

With Illustrations by National Geographic Photographer Justin Locke

FROM the heights above Santa Fe, oldest capital city in the United States, one can see the lights of Los Alamos, the Atomic Age city.

Indians working close to atom bombs go home to their pueblos by night and take part in fertility dances already old when Spanish explorers marched in four centuries ago.

Descendants of the Spanish settlers build their cool, simple homes of adobe, or sun-dried brick, just as ancient Egyptians used to do.

Anglo-Americans, as the third population element is called, acclaim both adobe architecture and tribal dances. Almost to a man they say, "I wouldn't live anywhere else." They point to clouds drifting like galleons across the sky, or to stars blazing like undimmed automobile headlights.

Forests Paint Hills Green and Gold

Here, where mountain peaks rise to 13,000 feet, the summer day is rarely hot, and June nights call for lighted fireplaces.

The Rockies, colored forest green or aspen-gold according to the season (pages 798 and 799), rise in two ranges, the Sangre de Cristo and the Jemez, their topmost peaks agleam with snow.

These ranges straddle the Rio Grande, a brawling, muddy stream flowing out of the mountains of Colorado. For miles it tumbles through an enormous, unpopulated chasm. Where its valley flattens out somewhat, watering cottonwoods and crops, it supports the Pueblo Indians, most advanced aboriginal culture surviving in North America.

Between river and mountains stretches a desert studded by piñon pines, which from a distance appear to have been planted in orchards, or by oceans of gray-green sagebrush, which give the illusion of being fields of ripening hay. Lava badlands and raw red cliffs enhance the desert's rich variety (page 804).

At intervals the wasteland is relieved by a flowing green oasis, the irrigated valley of a trout stream flowing out of snowbanks above timberline.

This report deals with that section roughly bounded by Santa Fe, Los Alamos, Taos, and Cerrillos (map, page 787).*

On a sagebrush plateau at the north end of this quadrangle sits Taos, a cluster of adobe homes built around the town plaza. In all appearances a country village, population 1,000, Taos is the cosmopolitan home of hundreds of painters, writers, and wealthy folk who have made it the Southwest's adobe Greenwich Village (page 803).

Artists in work clothes and art students in lush whiskers frequent the Plaza. At fiesta time, when everybody likes to dress in costume, you cannot tell artists from cowboys.

On market days so many Spanish-American farmers in wide-brimmed black hats plaster beneath the Plaza's shady arcades that a stranger might imagine himself in Spain were it not for signs like J. C. Penney and Ruth's Beauty Shoppe.

Lounging, long-haired Pueblo Indians wrapped in cotton blankets exchange stare for stare with visiting easterners, while working Indians in blue jeans drive trailer trucks through the streets.

Twice daily a horse-drawn stage leaves the Plaza on a "rubberneck" tour of San Geronimo de Taos (Taos Pueblo), close by.

[illegible]

Moon, Stars, and Neon Light the Plaza

When the last neon light flickers off, only moon and stars provide illumination, for the Plaza has street lamps but no appropriation for current.

"We resent the influx of neons like a plague," one resident told me, "but we are happy at having no traffic lights or railroads. Sometimes snow clogs the highway and delays the mail, but who cares? Not I."

Behind mud walls shaded by rows of cottonwoods, Taoseños lead lives of deep content. Ears of Indian corn hang drying beside their corner fireplaces. Their carved Spanish doors match heavy Spanish chests. Cool little canals flow intermittently through their lawns, and hollyhocks spring up between flagstones in their courts. Bowers of yellow roses bloom in their gardens.

* See, in the National Geographic Magazine, "Saving Our Spanish Southwest," June, 1940, and "New Mexico Melodrama," May, 1945, both by Frederick Simpich.

Once a Year Santa Fe Branches Close, Everyone Gets Out Fancy Dress

[illegible]

[illegible]

[illegible]

Two Artists 'Discovered' Here

[illegible]

Here the Atomic Bomb Is Developed.

[illegible]

People in Los Alamos Lead Almost Normal Lives

[illegible]

[illegible]

played ball with the Taos Indian team until [illegible] and he still plays tour-[illegible]

[illegible] I struggled [illegible] Frenchmen [illegible] Never [illegible] was ever [illegible]

[illegible] New Mexico and Sou[illegible] was driving over a mountain trail [illegible] a wheel broke. [illegible] mounted [illegible] wheel, and set out [illegible]

[illegible] I felt that I had entered [illegible]

As I surveyed the [illegible] turned Spaniards, and buckskinned [illegible]

Founders of the Taos Art Colony: Revival of Pueblo Dream Has a Genius As

[illegible]

[illegible]

Apartment Life in Taos Pueblo

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Indian Pueblos, Spanish Villages, Atom Laboratories—That's New Mexico's Fiesta Land

Santa Fe (Texas) Zoo has Tested High Price of Gloves for Burning at the Stake

Santa Fe Women Losing No Time Getting into Cowboy Clothes, Watch a Weaver at Work

Mariel Sinder demonstrates at the Southwest Arts and Crafts summer store. Ensches a blanket in the [illegible]

to be fortresses of [illegible] but outdoor ladders still serve as stairways and elevators.

[illegible] the apartments are dotted with conical adobe [illegible] in which women stay, children play, and men browse. Skins [illegible] and dressed early on pole-supported [illegible]

The Kiva, Relic of Pre-Christian Times

Ladders [illegible] out of circular underground kivas, chambers point down like [illegible] walled but windowless [illegible] the tribe's [illegible]

[illegible] surrounds the [illegible]

[illegible] were believed to have emerged [illegible]

[illegible] gods [illegible] Taos Indians [illegible] apartments, [illegible] page [illegible]

Santa Fe Señoritas in Blue Jeans

[illegible]

A century ago the inhabitants of the Santa Fe [illegible] the Plaza [illegible]

[illegible] granddaughters, I went to the same Plaza. I found [illegible] rolled to [illegible]

[illegible]

Before the *Mayflower* landed at Plymouth Rock, the pioneers laid out Santa Fe, using a plan drawn up in Madrid by royal order.

Today heavy traffic, proceeding without stop-and-go lights, lumbers through narrow streets designed for the Conquistadors' horses and oxen. The *mañana* tempo lingers: no one hurries much.

Since 1610, year of its founding, Santa Fe has been a capital, the oldest in the Nation. It has flown the flags of Spain, Mexico, and the Union, and briefly it belonged to the Confederacy.

Seat of government was the Governors Palace, a rambling one-story adobe structure on the Plaza. Here, when he was the American governor, Lew Wallace wrote parts of *Ben Hur*. In recent years the Palace has been a state museum of history and archeology. Says a marker: "From 1610 to 1910 the residence of over 100 governors and captains-general. Oldest public building in the United States."

Santa Fe Celebrates Its Liberation

Here in 1680 Spanish colonists stood siege by 3,000 rebellious Indians. Abandoning Santa Fe, they fled to old Mexico. Twelve years later Captain-General Diego de Vargas led a triumphal return.

Since 1712 De Vargas has been commemorated with a fiesta (pages 784, 794, 795, and 821). Each Labor Day week end the Plaza is given over to street dances, parades, and Indian markets; and the captain-general, impersonated by a citizen, rides again.

Santa Fe zealously preserves a statue of the Virgin, known as La Conquistadora, which, recent research has shown, came to New Mexico with the first Conquistadors. Saved by a refugee during the siege of 1680, she was brought back in triumph by De Vargas in 1693.

I saw La Conquistadora wearing a handsome wardrobe presented by women of her parish. Housed in St. Francis Cathedral, she stood in her own 1717 chapel preserved from the old *parroquia* (parish church) which used to occupy the site.

Archbishop John B. Lamy, the "Bishop Latour" memorialized in Willa Cather's *Death Comes for the Archbishop*, built the stone cathedral around the adobe parroquia so that Mass might be celebrated without interruption. Later he demolished the adobe church-within-a-church and proudly left the stone standing alone.

But fashions change. Santa Fe has turned its back on stone in favor of adobe.

Adobe's renaissance followed the restoration of the Governors Palace a few decades ago. Writers and painters built mud mansions. The Church, Catholic and Protestant, became an adobe convert. The most fashionable hostelry went up in adobe style. Uncle Sam contributed a handsome post office to match. Even filling stations and auto courts were built in the old-new manner. Now Santa Fe looks more than half adobe.

City Glorifies Humble Mud

Anglo-Americans have learned that nothing insulates a room from the sun more effectively than a heavy sheet of earth. Even on the rare but dry some eastern visitors walk into an adobe hotel room and demand, "Shut off that air conditioning."

Adobe similarly muffles sounds; voices always seem pleasant.

Six thousand years ago, before men knew how to build with stone, Egyptians constructed their Nile-side homes of sun-dried brick. Mesopotamian and early Greek civilizations were founded on humble mud building blocks.

The art of making such bricks descended from Egyptians through Moors to Spaniards. The very word *adobe*, from the Spanish verb *adobar* (to plaster), has been traced to the Egyptian hieroglyph [illegible], transcribed *dbt* and probably pronounced dobe. The New Mexico brickmaker uses the simple wooden mold of Egypt.*

Our own Southwestern Indians used dried mud for centuries before white men arrived.

When the first explorers cautiously surveyed New Mexico, they found Indians in apartment houses, later called pueblos (towns). Their earth-brown walls reflected sunshine so goldenly that the pueblos must have seemed built of the precious metal (page 792). Coronado, lured by such a chimera, sought the "seven golden cities of Cibola" in vain.

Spanish Architecture Wed to Indian

In those days the Indians built without bricks, patting big blocks of mud like wet concrete. Franciscan friars taught them to mold bricks in the Biblical manner, using a straw binder.

The amalgamation of architectural styles, Spanish and Indian, became known as Spanish Pueblo, the inspiration of New Mexico's handsomest buildings. This fashion retains the Spaniards' vigas, the heavy wooden beams supporting the ceilings, and the *canales*, rainspouts jutting from the eaves. Terraced masses and flat roofs copy the Indian mode.

* See, in the NATIONAL GEOGRAPHIC MAGAZINE, "Daily Life in Ancient Egypt," by William C. Hayes, October 1941.

Oembser's Drying Chile Peppers Emboss New Mexico's Adobe Walls with Scarlet

[illegible]

Sunset's Leading Cream Colds in Urban Apartment House In Taos Pueblo, Which Seconds Discovered in 1540

[illegible]

Concerned Less Elders Bundle in Festival's Rainbow Blankets. Jones Wears His Hair Short Beneath a Baseball Cap

"Any Name It—We'll Wear It," Says Santa Fe at Fiesta—Styles of 1700 and 1962 Mingle in the Plaza

[illegible]

To Children Unlefwe a Redskin, Fiesta Is a Circus in Which They Are Costumed Performers

[illegible]

Copper Kettles Glow Like a Thousand Sterling Suns

Urges Handwoven Wooden Ties as Indian Handicrafts, New Mexico Exploits Its Native Industries

[illegible]

Aspens' Ivory Columns and Pale-gold Foliage Entrance Hikers Near Twining

A Forest Fire Within Flames—Antonio's Shrine in a Cottonwood, North of Taos

Vacation Time's Cowgirls Park Their Gasoline Mounts at Bishop's Lodge, Santa Fe, and Watch a Rodeo Over the Corral Fence

Lisa's Doll Hospital Is a Repair Shop for Santos, Bizarre Saints' Figures Carved Long Ago, Some by Peninsular Artists

A Bathers' Oasis in the Desert In San Juan Rivers Pool Near Tesuque, North of Santa Fe

Red Man and White Man, Who Met Here on the Rattlefield in 1847, Rode in an Air Glass Below the Taos Mountains

Blue Sky and Naked Red Earth Compose a Dramatic Spectacle in the Chaco River Country

[illegible]

A Gift of Flash Bulbs Achieved This Gallery of Smiles in Chimayo, an Old Spanish Settlement

▲ Indians Sell Art on Santa Fe Walks

[illegible]

▼ This Wooden Indian Sells No Cigars

[illegible]

A change in architectural taste set in when the American flag ran up over the Governors Palace in 1846. Frontiersmen tried to make Santa Fe look like a Midwest town. Down came adobe; up went frame, brick, and false front; later a counterfeit Greek temple, or bank. Some raw 1890 fronts still mar the Plaza.

A Simple Mud Home May Cost $1,000

By making use of their own land and labor, Spanish Americans build their small, square adobe homes, some for around $1,000 if finished without lath.

On the outskirts of Santa Fe every vacant lot seems to be a brickyard.

I watched papa, mama, son, and daughter all engaged in making adobes. The hole which they dug for material became their cellar. In wooden molds they mixed the reddish clay with straw and water, then laid the bricks in the sun to dry. They carried walls in trenches and topped them with vigas. These pine beams they covered with split cedar rafters, tar paper, and eight inches of dirt.

Weeds and flowers struggled on these dirt roofs. On one I discovered an ants' nest rising in volcano shape.

In the artists' section I admired fine homes, some with broad picture windows, corner fireplaces, and built-in adobe benches. Across the road stood the hovels of the poor. Mansion and shanty blended harmoniously with the soil from which they came.

Straight adobe has one serious drawback: the dry earth cannot withstand much rain. Every rain turns the plaster to mud and erodes the roof edges. Santa Fe's scanty 14 inches a year are enough to cause trouble.

"Pueblo Indians solve the rain problem by having the women do a replastering job," a Santa Fe architect told me. "But nowadays the maintenance of adobe at prevailing wages does not pay. We architects use a number of substitutes, none of them entirely satisfactory. In one method, chicken wire is nailed to mud walls and finished with an adobe-like stucco."

Los Alamos Tames the Atom

From old Santa Fe the Southwestern style has spread 25 miles to the new Federal city, Los Alamos, some of whose modern residences copy the flat-roof adobe style (page 7851).

Los Alamos, the Atomic Energy Commission's wedge for laboratory and research center, supervises manufacture and assembly of our atomic bombs, using U-235 from Oak Ridge, Tennessee, and plutonium from Hanford, Washington, the atom's "powder plants."

This war-born boom town has been called the most important on earth. Its 9,000 residents include many of the Nation's top scientists.

Los Alamos has no graveyard, no unemployment, and no real-estate taxes. For lack of space, the dead are buried elsewhere; the jobless must get out; and Uncle Sam owns all [illegible]

This Federal city has a civilian manager, Capt. Carroll L. Tyler, who took the job in 1947 after 31 years with the Navy.

During the war, when the military had control, the city was so secret that its very name went unmentioned.

Homesick soldiers dubbed it "The Hill," a [illegible] still lingers.

When Hiroshima was atom-bombed, great was Santa Fe's astonishment to learn that the weapon had been assembled so close by.

Los Alamos (meaning The Poplars) was a log-built boys' school in a wilderness until geography pointed out its advantages as the hush-hush capital of a mammoth secret enterprise. Its very isolation was Los Alamos's good fortune.

Enormous Canyons Ring the City

The city, 7,500 feet in the clouds, sits on an hourglass-shaped plateau in the Jemez Mountains. On all but one narrow side it is surrounded by canyons 200 to 500 feet deep, a natural barrier to prying eyes.

The main entrance, the highway from Santa Fe, is locked to everyone but credentials carriers, and the entire city is strongly fenced in. Security police guard the gate and patrol the canyons. Out-of-town visitors find it impossible to "drop in" on their friends without due notice.

Once checked in, I was free to roam the streets unescorted, but, like most other visitors and many residents, I was refused entry to the city's heart, the world's finest physics laboratory, where the most powerful bombs are devised.

I had been in headquarters only a few minutes when an explosion rattled windows, shook desks, and arched my brows into unspoken question marks.

"What you just heard," said a public relations officer, "was an ordinary construction blast. We have many of them.

"Though Los Alamos has assembled all of our atom bombs fired to date, not one has been set off here. Eniwetok is the proving ground.*

* See, in the National Geographic Magazine, "Operation Crossroads," 10 pls. in color, April, 1947, "Farewell to Bikini," by Carl Markwith, July, 1946.

Church and Salt Cedar Comfort and Shade Spanish Americans near Chimayo

[illegible]

Is [illegible] Excited! A Tenth of Its People March in This Wedding Procession

[illegible]

[illegible]

[illegible]

Diapers Arrest High Birth Rate

[illegible]

[illegible] former New Yorker.

[illegible]

Beneath Sky's Black Infinity Stands a Tangle of Legs and "Such Stuff as Dreams Are Made on"

[illegible]

Bouquets of Orchids Hang Like Wash from a Laundry Line

Boys and Goat Rely Descend from Settlers from Spain

Holiday Makers on Sticky Ladders Prowl the Ghostly Caves of Aboriginal Cliff Dwellers

[illegible]

Careworn, Toil-marked, She Bears Her Sorrows Secure in a Simple Faith

[illegible]

[illegible] Sangre de Cristo [illegible] ins from [illegible] Winters snow [illegible] more white than [illegible]

In summer [illegible] fresh rain on the brown earth [illegible]

"[illegible] we [illegible] time are [illegible]," said her husband. "We [illegible] feel shut in. We have become loners, therefore. Name your hobby—chess [illegible] camera, ski, or world federation—we have a club to fit it. [illegible]

"What about the [illegible] them?" I asked.

"We have no complaint," Mrs. [illegible] answered. "Our Indian maid cheerfully [illegible]

[illegible] Indians are on the [illegible] lakes or streams. A few [illegible] are interested engineers or research [illegible]

[illegible] evening the Indians [illegible] carnival [illegible] T's trailers, and luxury cars clogging the main [illegible]

The Indians Dance Their Prayers

[illegible] she goes home [illegible] her tribal [illegible]

[illegible] Spaniards arrived [illegible]

pression, they have been dancing ever since.

Though many Indians devoutly accept the white man's god, they preserve the civilization of their ancestors.

His ancient faith sustains a pride in race, purity of blood, and a noticeable independence.

Scarcely a week goes by that some pueblo does not celebrate a Corn Dance or other festival with elaborate costume and ritual. The dancers decorate their bodies with feathers or skins to resemble birds or beasts (page 822). They paint or mask their faces and they chant the sacred words of ancient supplications. They dance to bring the rain and dance a thanksgiving for the harvest. Women dance barefoot to absorb fertility from Mother Earth (pages 815 and 817).

Lo, the Poor, Pestered Indian!

On some festival days the pueblos keep open house. White visitors pour in, parking in the wrong places, understanding almost nothing. Whatever the bedeviled Indian thinks, he conceals his feelings beneath a baffling mask of politeness.

To a few initiated spectators the Indian dance conveys the meaning of a hymn to Nature and her changing seasons. It gives a glimpse into their own ancestors' pre-Christian rituals.

As one of the uninitiated throng, I watched the Tesuques executing a borrowed Comanche war dance.

A sizable crowd was drinking a concessionaire's bottled soda when the dancers emerged from a kiva with zigzag steps. Braves wore feather bonnets and jingling sleigh bells. Wives and children danced with them. Old sires drummed and chanted secret words. For fear that I might reveal some recondite word, [illegible]

Our attention was fastened on a dancer who had painted his body a ferocious green on one side, a barbaric yellow on the other.

"Look!" exclaimed the woman beside me. "Even his face is painted. That reminds me; I think the Federal tax on cosmetics is unfair to women!"

At the sight of the war make-up, visiting pueblo boys were all eyes. These playtime cowboys, who in fun had made many a redskin bite the dust, were well behaved, even toward little Tesuque girls with braided hair and shoe-button eyes.

Some dancers are accomplished clowns, and I was informed that the Tesuques, giggling and howling, have burlesqued their visitors by dancing beneath umbrellas and ideal wigs.

Just outside Santa Clara Pueblo I met the happy English bride of an Indian war veteran. Mother of two half-Indian children, she said:

"I did much better than I expected. I thought I'd be living in a wigwam, but here I share a duplex adobe apartment. I have a washing machine, vacuum cleaner, electric refrigerator, and automobile—things I wouldn't have had at home. No, you couldn't drag me back to Liverpool!"

Old Indian Caves a Fantastic Sight

Though most of the Indians live beside the Rio Grande, their ancestral homes lie in such isolated places as the Jemez Mountains.

Driving into the Pajarito Plateau one day, I saw hundreds of long-abandoned Indian caves puncturing the cliffs. In their dreamlike setting these caves suggested galleries of eagles' nests or the embrasures of a Titans' fortification.

Eons ago the plateau was colored by the outpourings of a giant volcano. Tiny streams, etching deep canyons in the ash, laid bare walls of sunset pink and sepulchral white.

I tested the white ash in my hands; it crumbled like cheap concrete. Rain had carved it into wigwam shapes and pockmarked it like a Swiss cheese.

Primitive cave men found this soft material easy to work and the cliffs easy to defend. The first settlers dug holes into the bluff, entered them by ladders, and in times of danger drew the ladders up after them.

Later they quarried soft blocks of tuff and lined the cliff with houses, using the caves as back rooms. As their numbers increased, they built an apartment house with at least 300 rooms on the ground floor. This house long ago collapsed into rubble.

Scientists Restore the Scene

Archeologists, digging through the tumbled [illegible] structed the bones of this old civilization, in a forested canyon called Bandelier National Monument (page 812).

Here migrating pueblo folk settled centuries ago to take advantage of cliff defenses and running water. Rito de los Frijoles trickled through their valley. Using its waters, the Indians irrigated corn, squash and beans. They domesticated dogs and turkeys. In caves, the women wove cotton cloth; you may still see the marks of their looms.

Our party explored smoke-blackened caves, gazed at fading cliffside pictographs, climbed ladders into reconstructed houses, and toured the crumbled apartment house.

Feet dusty and aching, we waded in cool Frijoles Creek. Tall pines and cottonwoods

Rain Prayer Invoking the Sacred Wand, Issue for Showers, Dark Clouds Seem To Answer

A Spanish Church's Mosaic Beasts Stare the Eye

[illegible]

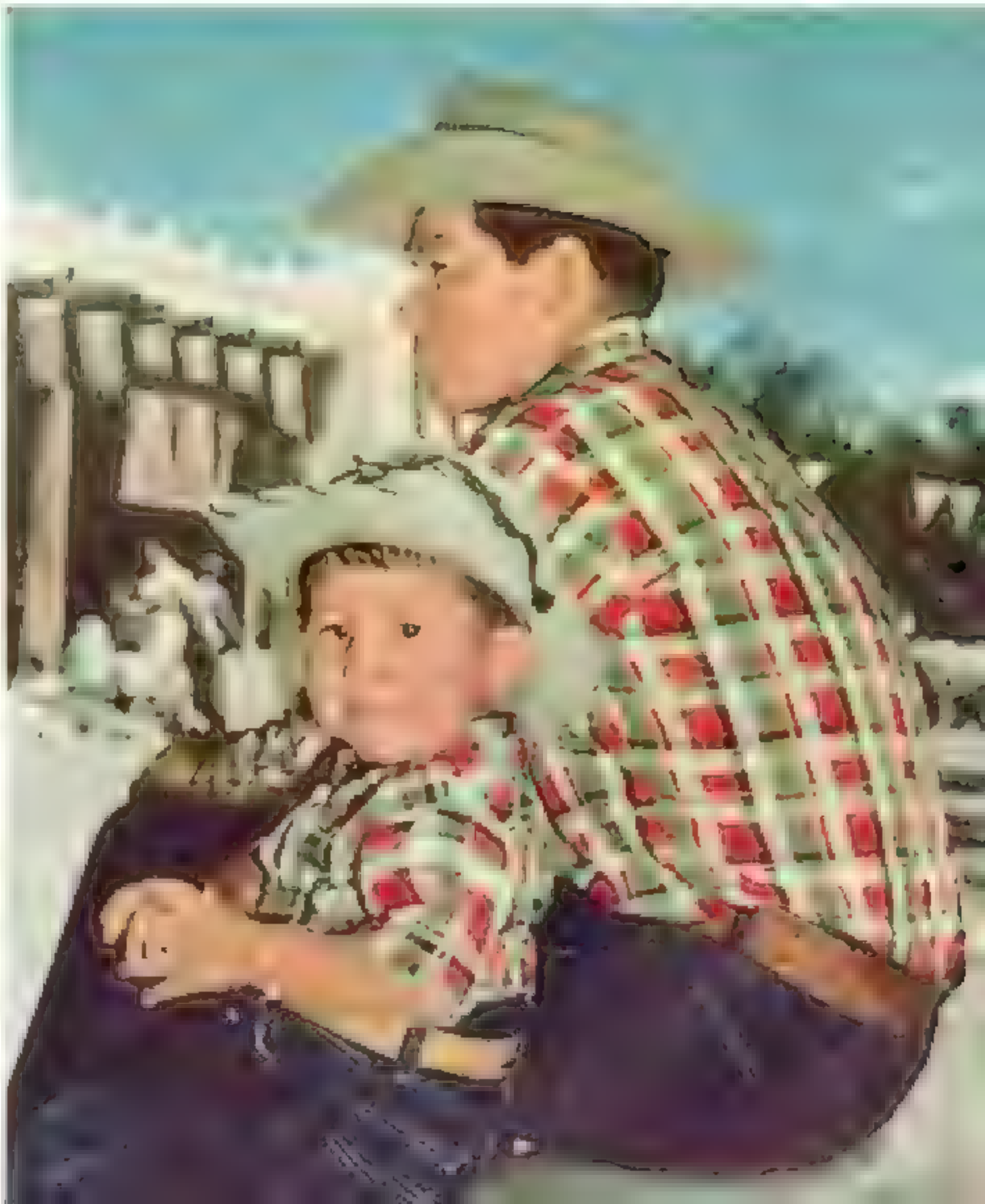
San Ildefonso's Corn Dance Celebrants Begin Their Pattern Some Through the Pueblo Beneath a Canopy of Boughs

A Thousand Thirsty Sheep, Making Their Accustomed Track from the Mountains, Invariably Water in Jessey River

As Cloud Shadows Engulfed the Jemez Mountains, a Rancher Moves His Rebuilt Stock Down a Flooding Yellow Road

Tortillas and Coffee Are Served on the Lumber-covered Adobe Floor of a Cochiti Pueblo Apartment

Barbara and Sam Celebrate a Dance at San Ildefonso Pueblo and Play Cowboy at Santa Fe Dogs.



Painted Leather Warrior Belle Hughes Pictures & Photos of Cochiti Pueblo

shaded us; four-o'clocks bloomed wild all around. Birds sang; the brook murmured.

"What a perfect spot," we mused. "Why should anyone leave?"

By the year 1600 the cliff dwellers had deserted their town and retreated to the Rio Grande, where water always ran. Did they suffer disease, soil depletion, famine, drought, or invasion? No one is sure of the cause, but drought and raids were certainties. Nomadic enemies, who reaped crops with bows and arrows, plundered the pueblos for warehoused grain.

Medieval Spain Survives in the Hills

Leaving the Indian country, I toured remote Spanish-American villages at the foot of the Sangre de Cristo Mountains. I drove through Penasco, Trampas, Truchas, and Cordova, each as Spanish as its lilting name. Grandmothers wore black shawls greening with age. Anglo-Americans were nowhere in sight. Nothing had changed, I imagined, in the last 200 years.

At harvest time herds of threshing goats trampled grain from chaff, and in some villages scarlet strands of chile peppers garlanded outer walls (page 791).

Each community irrigates its green valley, damming a mountain stream with brushwood barricades. Between these valleys the wilderness lies unbroken. Difficult trails left the towns isolated for centuries (page 820).

Even today a New Mexico guidebook describes the Trampas-Truchas road as "dangerous . . . safer as a pack trip."

Not yet having read the guide, I undertook the trip with no misgivings. Soon I found my automobile roller-coasting along a dirt-top skyline drive built across the summit of a ridge. There was width for one car.

Not a rival motorist, but a hundred goats compelled me to stop in the midst of nowhere while the herd's three canine guardians attacked my car savagely.

In Chimayo, which knew the loom centuries ago (pages 759, 805), I found the weaving art still flourishing. Every other family seemed to have its hand loom.

Santos: New Mexico's Primitive Art

Here I visited El Santuario, a chapel noted for its Santo Niño (Holy Child), to whom farm families look for bountiful crops (page 816). Chanting prayers for rain, they parade the figure through dry fields by night.

Childless wives make pilgrimages to Santo Niño. By custom, the woman whose prayer is answered dresses the statue in a new pair of slippers, taking the older pair for her own child. I saw the infant Jesus attired in baby shoes. Beside Him stood a larger *Cristo* in men's coarse cotton socks and moccasins.

Within recent years remote Spanish villages have witnessed a collectors' hunt for those carved and painted saints which here are called *santos* (page 801).

Santos grew out of the poor Spanish colonists' need for religious statues at the end of the 18th century when Spain and Mexico ceased transporting new ones across seas and deserts. In those days *santeros*, or saint makers, wandered from village to village, each with his burroload of images.

As the santeros lost touch with conventional church art, their primitive carvings took on the naive look of children's art creations. Sometimes grotesque, often out of proportion, they were nonetheless intensely human. Santos grip the imagination, compel attention.

Such statues are made no longer. The native art perished when the American occupation opened the gates to mass-made substitutes.

Today the old figures fetch fancy prices. I saw one Joseph, with the Child perched on his shepherd's crook, whose owner reported she had refused a $1,000 offer.

In one collection I inspected a crucified San Acacio, a Christian martyr in Roman times, carved with beard, mustache, and black hat to resemble a Spanish soldier of the 19th century. Another crucified figure had a wound for piercing with a spear. A third exposed a throbbing heart operated by a string. Other santos had flexible arms so they might be taken off their crosses and laid in coffins.

The Death Cart, Made by Penitentes

Prize of the collection was a large carving called the Death Cart. In it rode a yellow-winged, glass-eyed Death represented as a grisly archer (page 828).

With sly, cruel mouth, decayed nose, unkempt hair, and head too tiny for the body, this figure was utterly frightening.

Death's bow and arrow, replacing the conventional scythe, seemed custom-made for the Indian country, where no pioneer knew when an arrow might seek his life.

The cart was a creation of the Penitentes, a Spanish-American lay brotherhood, of whom many eerie tales are told.

During the Easter round, when Christ was in His tomb and Death triumphant, the Penitentes dragged the cart, with ropes slung over shoulders, to a place of penance they called Calvary.

Every Penitente village has its secret meeting place, like the kiva; this is called the

morada. In such a chapel the Cart is kept.

During Lent the Penitentes, like Christ, drag heavy crosses uphill. They kneel on thorns. Dressed in white shorts and black hoods, they flog themselves across bare backs with yucca whips.

"The blows sounded like the thud of a medicine ball thrown from belly to belly in a gymnasium," said one eyewitness who had spied upon a ceremonial.

"Tradition says," he continued, "that Penitentes used to nail men to the cross. Whether nails were used or not, I did see a volunteer tied to a cross. He stood his martyrdom until he fainted."

Penitentes are a living counterpart of the santos. For lack of new statues, they created their own. For lack of priests the unlettered mountain folk strayed into practices as primitive and realistic as their own santos. Though these men were extremely devout, intending no harm, the Church years later felt it necessary to denounce their practices as offensive.

Padre Traces Ancestors Back to Spain

To learn the history of the Spanish Americans, I talked to one of their race, Franciscan Father Angélico Chavez. As an ordained archivist at St. Francis Cathedral, he was translating yellowed Spanish documents, throwing new light on Church and State history (page 830). His research has upset previous theories on the origins of La Conquistadora and the Penitentes. I have used his versions.

By exploring the pioneers' records, Father Chavez has traced step by step his paternal and maternal ancestors to 16th-century Spain.

"If I told you all my forebears were illustrious," he said, "you would not believe me; so I shall admit I have uncovered some scoundrels."

"Anglo-American visitors," the padre continued, "take one look at our faces and instinctively label us Mexicans. Many of us resent the description unreasonably, ignorant of the fact that true Mexican culture has been superior to ours. Yet, apart from this fact, we are right in not considering ourselves Mexicans, since we lack the national outlook of the great country to the south. Actually, we were Mexicans for only a few years in our history, from 1821 to 1846, and had nothing to do with the revolt against Spain.

"New Mexico was always an isolated outpost. Supposing the United States had never taken over, we would be an island of 17th-century Spain.

"In the beginning the Spanish Crown granted immense tracts in New Mexico to the aristocrats. These men, owning everything in sight, were called *ricos* (rich men). They built great adobe ranch houses and lived like feudal barons. All their work was done by their followers, who tilled the soil like peons and possessed nothing but their debts.

Gone Are the Aristocrats' Mansions

"But times and empires changed. In 1821 Mexican rule succeeded Spanish; in 1846 the United States took over. Feudalism perished, at least in name.

"Today the ricos' mansions are gone; scarcely an adobe is left. Their limitless lands became so divided and subdivided that fence rows appeared to occupy half the cultivated fields. But new ricos have replaced the old. Since 1846 Anglo-Americans with money and know-how have been buying up the land. Native New Mexicans, with a few exceptions, are losing their ancient inheritance.

"Some of our leading families, it is true, descend from the ricos, and some directly from the Conquistadors. Even among the common folk you may observe blond heads and blue eyes, red hair and freckles. These are a heritage from the Celtic part of Spain, not the legacy of some itinerant Irishman.

"All of us centuries ago lost touch with our cousins in the Old World. So Americanized are our young people that they speak English among themselves, using Spanish only in the presence of their parents.

"Our Spanish idiom remains so antique that I have no trouble reading the pioneer documents. Appalachian hill folk preserving Elizabethan vocabularies are your English-language counterparts."

The "Anglo" and How He Dresses

The Anglo-American, New Mexico's third population element, takes pride in carrying on no neighborhood feuds with Indian or Spanish American. Born, more than likely, somewhere else, he has learned to love New Mexico's leisurely way of life.

A Spanish-costumed waitress from New York told me, "Wild horses couldn't drag me back to the hot subways, the shopping [illegible]

"Life is so terribly simple out here," said a former Indiana woman. "One doesn't have to own a wardrobe full of the latest styles."

The Hoosier said it! Anything goes.

I sat in a Santa Fe hostelry watching the [illegible]

A woman in lumber-pole sweater strode in with slacks at half-mast. No one blinked.

Then a blonde in high Spanish comb strolled by, tucked up a long black lace skirt, rolled

All Los Alamos Children Seem to Know the Answer—Aren't Their Dads Ph.D.'s?

[illegible]

[illegible]

[illegible] New Mexican [illegible]

[illegible] Los Angeles [illegible]

[illegible] west Texas.

Texans Persecuted? Don't Believe It

[illegible] New Mexican [illegible]

[illegible] Texas.

[illegible] New Mexico [illegible]

Spanish Children in Tulpa Are as American as Ice Cream and as Sweet as Candy

"Fa[illegible] have wrought a [illegible] in the Spa[illegible] enough," pioneer artist Bert Phillips [illegible] the author. "Sunway [illegible] clothes [illegible] select the [illegible] Better [illegible] the race is [illegible] Spanish girl in Tal[illegible] New Mexico [illegible]

but "in Little Texas they have united several countries etc. But don't mistake me," he apologized, learning I was a former Texan, "we love the Texans; they bring us lots of business."

As if in reply to these g[illegible] Texans [illegible] ing in Red River [illegible] hung resort, go together each July 4 and valiantly sing "The L[illegible] of Texas."

No Bullfights—This Is *Not* Mexico

Complicating interstate relations still further, an occasional tenderfoot easterner blunders into the picture with some amazing misapprehensions. Having driven west with the aid of maps presumably less antique than the seventh charts, he is astonished to learn that New Mexico is *not* a part of old Mexico. A New York-born storekeeper in Santa Fe gave me these quotations:

"Be sure to give me my change in American money. I don't want Mexican money.

"Where do you learn English? I thought everybody here spoke Spanish.

"How much duty will I have to pay to ship this package back to the U. S. A.?

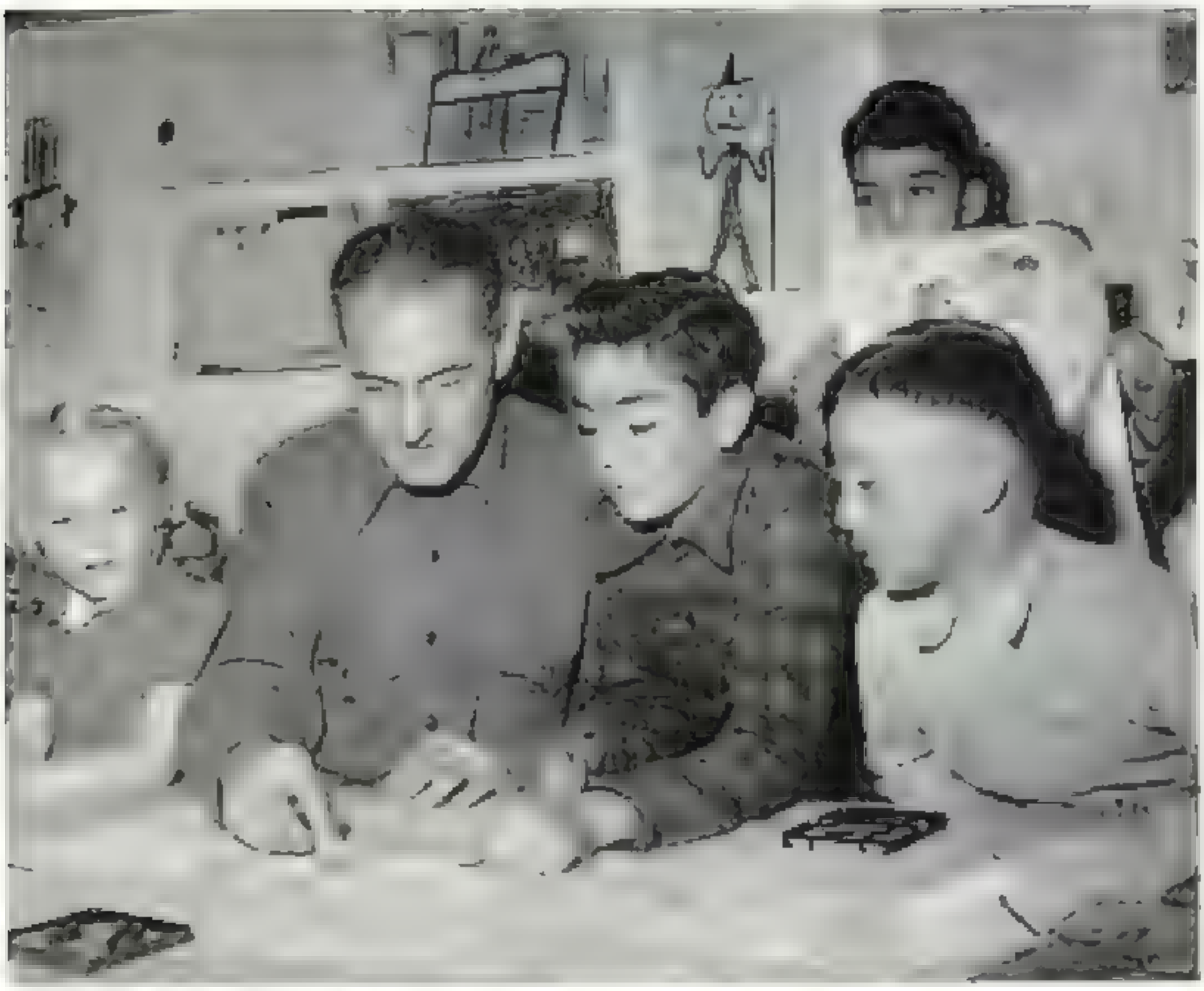
"Do the Indians go on the warpath any more?"

"When do you pull the bullfights are?"

The first thing many a visitor does upon arrival is to buy a pair of cowboy boots. His second act is to mark the golf course with his new high heels.

Curio stores tempt travelers with beaded Indian vests, cradleboards, polished petrified wood, corn-kernel necklaces, and decorated buffalo hides.

Chimayo blankets, woolen ties, and some Indian jewelry offer substantial values (pages 780 and 797). But what does a Bostonian do with his coiled rattlesnake ashtray, or his wife with her 50-gallon Mexican hat?



Tots Children, Growing Up in a Painters' World, Class On an Art Class of Their Own

Jack Berkman conducts the [illegible] at Harwood Foundation, an art gallery, library and community center. His 60 Anglo [illegible] and Indian pupils illustrate Indian legends. "Rain gods" and "spider mothers" never lack their [illegible]. They draw mustaches in one face black [illegible] crimes. "These children are so eager to learn [illegible]," that we have no discipline problems.

A more valuable souvenir, in my opinion, is a trip into the timbered high country where irrigation waters gather. Large sections here are guarded as national forests.

Thousands of lumbermen, stockmen, and farmers depend on [illegible] for a living. Natural reservoirs, they impound winter snow for summer irrigation.

Lottie F. Cottam, supervisor of Carson National Forest, took me driving through his [illegible] domain. Crossing passes nearly [illegible] feet high, we looked up at snow peaks.

No billboards marred the lovely vista [illegible] in an aspen wilderness far removed from city traffic we came across a sign reading, "All day parking, 50 cents." What appeared to be a [illegible] turned out to be a landowner's bid to motorists to camp on his trout stream.

One road led through ghostly Elizabethtown, a roaring gold camp in the 1860's and '70's. "Eltown" had seven saloons and three dance halls, but no restaurant. [illegible] Elizabeth, a lone name on an old false front, survived as a monument.

We found [illegible] Baldwin's first and only jail, a roadside [illegible] *Edgemere*, a dredge which [illegible] $100,000 in gold in its first 1 year had sunk in its own silt. Gravel, once [illegible] for once staked and claimed, scarred the far [illegible]. Only a handful of people, mostly newcomers, were left in a town which once claimed 3,000.

Gold fever had marked stretches of road with miles-long flumes and with canyon trail so steep that descending ore wagons used to drag huge logs as brakes.

Gone were old-time bearded gold seekers and their shuffling burros. In their place we saw keen young men in station wagons hunting radioactive minerals with Geiger counters.

Farther on, my guide pointed out a new fence whose green aspen posts had been gnawed by dam builders. Beaver, once trap

Death in Trampas Holds Not Scythe but Bow; She's a Lady

Remote Trampas (meaning Traps) is a center of the Penitentes, who [illegible] [illegible] This carved wooden skeleton is known as Doña Sebastiana [illegible] [illegible] [illegible] [illegible] manner. These boys get the [illegible] [illegible] [illegible] receive from the [illegible] [illegible]

ned almost to extinction, were coming back.

Here and there livestock nibbled at [illegible] mountain grass. On some overgrazed private lands, we observed, grass had [illegible] [illegible] had disappeared, trees had toppled, and land had gullied. Rains ran down such eroded slopes like water off tin roofs.

A Fisherman's Dream—1,000,000 Trout

Protected lands were lush with [illegible] and deep in humus. Root systems held water the year round.

"We in the Forest Service," my friend observed, "say this land is more important for watershed purposes than for grazing. Since we desire to utilize its resources, however, we [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

"[illegible] [illegible] timber [illegible] [illegible], never stays off the market because it is protected by the national forest during early life against improper exploitation. As that tree matures we mark it for cutting; and a contractor working through the woods in a 20-year cycle, crops it. Like a fisherman throwing [illegible] undersize trout back into a stream, he allows young trees to grow.

"By avoiding [illegible] cutting, we create no [illegible] vistas of stumps and eroded soil. The thinning-out method makes replanting unnecessary.

"In [illegible], inaccessible areas [illegible] do fall and rot [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] and fortify the watershed."

Visiting Red River State Fish Hatchery [illegible] [illegible] [illegible] [illegible] million trout, ranging from 20-inch speckled beauties to half-inch fry. Troughs in[illegible] [illegible] [illegible] [illegible] [illegible] trout [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] as food. Outdoors, 90 [illegible] [illegible] [illegible] larger fish.

[illegible] [illegible] into one of the [illegible] Roy Barker, the [illegible] [illegible] instantly. When [illegible] [illegible] you can see a solid wall of leaping [illegible].

We finished our tour at 5 p.m. [illegible] [illegible] on Saturday.

"[illegible] [illegible] [illegible] [illegible] Barker. [illegible] [illegible] [illegible] [illegible] and recreation."

Several of his helpers had dropped their tools, grabbed rods, and set out down a near-by

Eva Trout Are Easy To Catch at Red River Hatchery, the Home of a Million Fish

[illegible]

[illegible] of big [illegible] free [illegible]

Millions of Trout Planted in Streams

[illegible] to Ken's father, Elliott [illegible] Game Warden.

[illegible] year 1948-49," he said, "New Mexico [illegible] hatcheries planted 4,08,0,000 trout. [illegible] Game and Fish [illegible] and [illegible] trail where [illegible]

[illegible] Pecos River, I [illegible] Mountain View Ranch, a dude [illegible] the front porch that evening I [illegible] deer scad out of Santa Fe [illegible] a sad lick within [illegible] shot.

I [illegible] know we have no game," said Lamar Lamb, the manager. "[illegible] read the Santa Fe papers. The [illegible]

A Spanish-American Historian Unravels the Traditions of Colonial New Mexico

[illegible]

[illegible] Hunter [illegible] and [illegible] to [illegible] Elegant [illegible] suggests [illegible] Yet [illegible] were [illegible]

We Got Lost in a Blizzard

Though it was June, Arctic conditions prevailed. Our mounts floundered across rolling [illegible] of snow. At 11,000 feet saddlestones [illegible] unprotected ears, penetrated shoes and collars, and melted.

When [illegible] we threw [illegible] sulkers in the rear got lost. I was glowering, [illegible] how I would [illegible] appeared and [illegible]

[illegible] We [illegible] [illegible] Well, [illegible] I [illegible] [illegible] moving the [illegible] looked [illegible]

[illegible] I found a blanket and [illegible] the spot where I froze by night. I caught a sunburn.

[illegible] stuck! We caught, and almost [illegible]

Well, that's New Mexico. I think [illegible] something. In 1948 it attracted [illegible] travelers, twelve visitors for each New Mexican. Thirty-five percent of them were Texans.

Sheep Airlift in New Guinea

A New Guinea Highlander, Unclothed in Knitted Dark Clothes His Parents Would Start

[illegible]

Bare-up-Narrow Men Watch a Plane Roll In with Sheep for Their Empty Larders

Pleasing Kicking Sheep Find a 200-Yards Flight from Australia Bulbes Cup

Walsh Valley Cockatoos or Bulbiferous Bird-of-paradise Pitcairnia Wavecrest Hemicycle

A Bruised Prostate Appears Since Bush Pushback By Iran Subpoena

A Transport Plane Unloads; Its Wooden Cargo Scrapped Behind It Across Kotamage Gardens

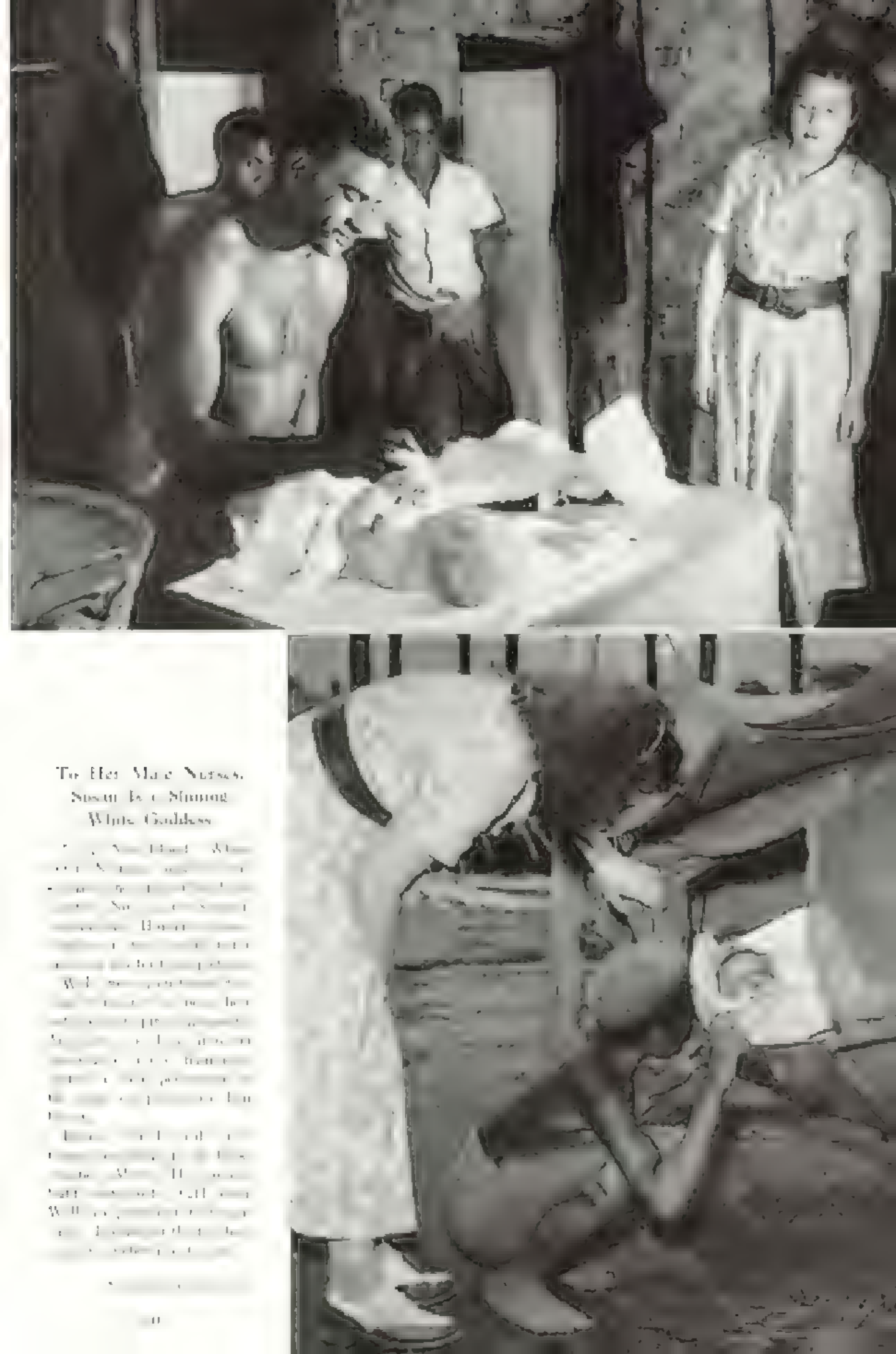
An Eager Array of Brand-new Shepherds with Leafy-branch Crooks Dressed up Fresh Hours

Chanting Drummers Advance to Welcome White Men — **Shell Nose Plugs and Painted Faces Twist Friendly Smiles into Seeming Scowls**

Between Women of All Races, the Paramount Topic Is Babies

An Unprecedented Embrace Brings About a Gesture of Despair

Baby Susan Blood Cross and Gurgles: No Bassinet Can Make a Face to Scare Her



To Her Mate Nerissa,
Susan Is a Stunning
White Goddess

A Patriarch Lies Dead Circling, Mourners Scream the Air with Anguished Wails

Ballroom Dancing: Cheek to Cheek, Nose to Nose

"West" Is "Bessie's" Brother Beneath Painted Skin

Tomorrow's Shell-Shock Doubles Souls as the Prospect of Future Western Gymnasts

The Society's New Map of Classical Lands

MORE [illegible] effectively combined in the new 10-color map of Classical Lands of the Mediterranean, which comes to the 1,650,000 members of the National Geographic Society with this issue of their NATIONAL GEOGRAPHIC MAGAZINE.

The new chart, a companion to The Society's map of Bible Lands and the Cradle of Western Civilization, distributed with the December, 1945, NATIONAL GEOGRAPHIC, is drawn on the generous scale of 43.4 miles to the inch. It is an indispensable aid to students and also affords a fascinating refresher course in the rise of civilization.

Two hundred and seventy historical notes, printed in red, appear on the new map. Thus the chart carries some 2,600 words of notes as well as 3,200 place names, without overcrowding or impairing legibility.

Modern and Ancient Names Listed

The notes provide hours of entertaining reading. The double listing of ancient and modern place names is an incomparable aid in historical or geographical research.

Modern official place names are listed first, with ancient names directly beneath or beside them in brackets. Unofficial or Anglicized names, honored only through long usage, have been omitted. For example, the island of Corfu, off the southern tip of Albania, is listed as Kérkira (Corcyra); Florence, Italy, is Firenze (Florentia); Constantinople, Turkey, is Istanbul (Byzantium).

Regional names designate areas as they existed in ancient times. On the new map, Liguria, in Italy, extends as far north as the Po River, its expanse in the days of Caesar Augustus. The modern Province of Liguria is a narrow coastal strip stretching from the French border east to La Spezia.

Calabria, on the map, identifies the "heel" of Italy's "boot." Today Calabria is the "toe." The name was switched from heel to toe some twelve and a half centuries ago.

All of Italy, Greece, and Albania fall within the borders of the new map, along with parts of eight other countries and the islands of Malta, the Dodecanese, and Crete.

Many areas of the new map recall vividly the heritage bequeathed us by historic peoples and places of long ago.

Nearly 40 centuries ago the Minoan kings on the island of Crete were men of vast wealth. Here they built huge palaces of stone. Their people worshiped the bull as a sacred animal. Their craftsmen made pottery and engraved metal of high artistic merit.

On Crete arose the well-known legend of Theseus, the Athenian, who came to the island, entered its far-flung labyrinth, and there slew in his stronghold the Minotaur, a monster half bull and half man who fed upon human flesh.

The map of ancient Greece recalls the haunts of philosophers (Socrates, Plato); poets (Homer, Sappho); warriors (Leonidas); sculptors (Phidias); and statesmen (Themistocles, Pericles).

One of the map's six insets shows ancient Athens, with historic spots listed. There is the Grove of Academus, where Plato taught and whence comes our English word "academy"; [illegible] Lyceum where Aristotle gathered [illegible], and Piraeus, whose importance as a port was visualized by Themistocles as early as 480 B. C.

Italian place names and notes recall the early Etruscans; the building of Rome on its seven hills; the days of the Republic when Cicero and Cato held forth in the Forum; and the era of the emperors, from the mighty Julius Caesar to the weaker monarchs of a later day who finally succumbed to the barbarians from the north.

Scanning the map, the reader will be reminded of the martial exploits of the Caesars, Hannibal, and Alexander. Scenes of these or land and naval engagements are noted, along with ruins and sites of dead cities as important to the ancients as are London, New York, and Paris to our modern world.

Guide to St. Paul's Journeys

On The Society's map of Bible Lands, the missionary journeys of St. Paul were outlined in an inset. On the new map most of these historic travels may be followed in detail.

Thessaloniki, capital of Macedonia and the modern Salonika, knew St. Paul well. How he and Silas preached to the Christians there is told in Acts 17, and I and II Thessalonians are addressed to them.

Acts 17 also tells of St. Paul's appearance in the market in Athens, where he disputed with the Epicureans and the Stoics—an example of the epic clash between Greek philosophical teachings and Christianity.

* Members may obtain [illegible] copies of the [illegible] standard maps published by The Society, by writing to the National Geographic Society, Washington [illegible] Prices in United States and Possessions: [illegible] on paper, $1.00 on linen, [illegible]. Outside United States and Possessions: 75¢ on paper, $1.25 on linen, [illegible]. All remittances payable in U. S. funds [illegible]

[illegible] November [illegible]

TO: The National Geographic Society

FROM: The Air Force Association

World War II introduced global conflict for the first time in history, and with it the demand for cartographic information to guide American airmen and airplanes to the far corners of the earth and back again.

That the military services could not meet this demand was part of national unpreparedness. That a non-military agency, the National Geographic Society, could help fill the breach was at once a tribute to the significance of this organization and a testimonial to the civilian contributions that made victory possible.

The maps and charts of the Society guided men of the Air Force over the waters of the Atlantic and the ice caps of the Far North; over the islands of the Caribbean and the jungles of South America; helped build the air routes of Africa; went with the men of the Air Force over the Himalayas from India to China; took airmen up the long, hard island route of the Pacific from near defeat in Australia to victory in Japan.

For its ability to meet the emergency requirements of its country, for its invaluable contributions to the Air Force in accomplishing a global mission, the National Geographic Society is awarded this Citation of Honor for outstanding public service.

The Air Force Association
C. R. Smith
President

Dated
July 7, 1947

National Geographic Maps Guided Airmen Over Jungles, Seas, Mountains

[illegible] C. R. Smith, its president.

It was at the Greek seaport of Corinth that Paul dwelt with Aquila, the tentmaker (Acts 18). After an 18-month stay he departed for Syria, taking Aquila and his wife Priscilla with him. During a later visit to Corinth, scholars believe, he wrote the Epistle to the Romans.

Acts 19 tells of Paul's trip along the "upper coasts" to Ephesus in Turkey; his two-year stay among the Ephesians, and his encounter with Demetrius, the silversmith, who made shrines for the Temple of Artemis. Ephesus, it will be remembered, was one of the "seven churches" mentioned in Revelation 1: 11.

Scholars believe that I Corinthians was written during Paul's stay at Ephesus and that II Corinthians was written while he was on his way through Macedonia.

Paul later made his historic journey to Rome (Acts 28) about A. D. 59.

Sites of four of the Seven Wonders of the Ancient World come within the scope of the new map.

One was the original Temple of Artemis at Ephesus, on the Aegean coast. Ionian cities cooperated to build this monument, a marble edifice 425 feet long and 225 feet wide. The roof was supported by 127 columns of Parian marble, each 60 feet high. Ctesiphon was the architect. In 356 B. C. the temple was burned by a fanatic.

Another wonder was the statue of Zeus, in the valley of Olympia near the west coast of Peloponnesus. Phidias, the famous sculptor, built this marble, ivory-encrusted memorial. Its draperies were of beaten gold.

The tomb of Mausolus, a third wonder, was built by the king's widow at Halicarnassus, on the coast of present-day Turkey, in 353 B. C. It was remarkable for its magnificent interior. The building was destroyed by an earthquake, but its name, the Mausoleum, has come down to us today.

Incidentally, Halicarnassus was the birthplace of Herodotus, the noted traveler and historian of the ancients.

Also destroyed by an earthquake was a fourth wonder, the Colossus of Rhodes, a brass statue representing the Greek sun-god, Apollo. It stood about 109 feet high at Rhodes, on the island of Rhodes.

Others of the Seven Wonders, not located within the borders of the new map, were the Pyramids of Egypt, the Hanging Gardens of Babylon, and the Pharos, a white-marble lighthouse on the island of Pharos in the port of Alexandria, Egypt.

Other remarkable ancient accomplishments noted on the new map are the Circus Maximus and the Colosseum at Rome, and the Appian Way (Ancient Rome inset).

The Circus Maximus was built by King Tarquin and enlarged by Julius Caesar. Its further expansion by the end of the fourth century after Christ enabled it to seat 385,000 spectators at horse and chariot races.

The Colosseum, built by 12,000 slaves from Jerusalem, had a seating capacity of 50,000 and standing room for 20,000 more. Wild animals were kept in dens beneath the floor. Thousands of persons, including early Christians, perished here in combats with tigers and lions.

The Appian Way, begun by censor Appius Claudius about 312 B. C., stretched 360 miles from Rome southeast to Capua, thence to the east across Italy to Brundisium (then Brindisium), on the Adriatic Sea.

Inset Shows Greco-Roman World

In the upper right-hand corner of the new map a large inset of the Greco-Roman World compares the greatest extent of Alexander's empire in 323 B. C. with that of Rome at the time of Trajan, A. D. 116. Phoenician and [illegible] colonies are [illegible] in Roman and red for Greek.

Names used in the inset retain classical or Latin forms of the time when Latin was spoken, if not read, by educated Europeans. Modern names appear in brackets.

Three smaller insets show the geography of the world as it was known in the time of Homer, Herodotus, and Strabo, a period covering the first 1,000 years of recorded history.

The Greeks of Homer's day believed the world was a flat, circular plate, the Faith of which were enclosed by the River Oceanus. The inhabited world then centered chiefly around the eastern Mediterranean and Black Sea regions. Their hazy knowledge of the western Mediterranean is represented by scattered islands inhabited by monsters such as Scylla and Charybdis. Homeric Greeks feared the sea and confined their shipping to near-by coastal areas.

There is a strong suspicion that stories of monsters and terrors were circulated by the seafaring Phoenicians to discourage competition in their maritime trade.

Herodotus lived about 400 years after Homer. The inset of his world incorporates four centuries of geographical progress. The Greeks by this time had ventured into the western Mediterranean. Italy, Sicily, and lands west were recorded. Regions south and east of the Black Sea as far as India became a part of the inhabited world. The North

African coast from the Pillars of Hercules to the Nile, together with Phoenician and Egyptian settlements, were better known.

Strabo was born at Amasia in Asia Minor about 63 B. C. His world as shown in the third inset is a composite cartographical picture of the inhabited world as it was known at the dawn of the Christian Era.

The world of Strabo also expanded in direct proportion to the movements of man. As traders and scholars returned from outward journeys, better accounts were recorded of the lands and people north and south of the Danube (Ister). As trade flourished, lines of communication lengthened. More detail of land masses was given.

New Map Guide for Air Travelers

Modern highways on the new map are shown with a red half-tone line; railroads are drawn in black. Approximately 70 important air terminals are shown, each indicated by a red star.

Sight seeing from the air on a flight from Rome to Athens with The Society's new map in hand, could afford fascinating identifications of the varied scene beneath.

Beyond Rome the panorama would include modern Cassino, front-page news of World War II; and Arpinum and Venusia, birthplaces of Cicero and Horace. Farther southeast near the Gulf of Taranto, the site of Heraclea would come into view. Here, in 280 B. C., the elephants of Pyrrhus, king of Epirus, terrorized the horses of the Romans and aided to the defeat of the Roman army.

Crossing the Ionian Sea to the west coast of Greece, passengers could identify the site of Actium where Octavian defeated the fleet of Antony and Cleopatra in 31 B. C. Twenty-five miles south are the cliffs of Leucate, the promontory of the ancients, where at Apollo's festival criminals with birds attached were thrown from cliffs. Those that survived were set free.

Approaching Athens, passengers would see Mount Oeta, where Hercules came to die on a pyre, and Mount Parnassos, reputed landing place of Deucalion, the Greek Noah.

The Italian town of Adria, the Atria of the ancients, originally founded on the Po estuary, is now 14 miles from the sea. Black silt from Italy's steep mountain sides and fertile valleys has been carried down swift-flowing rivers, burying villages and making up a huge delta similar to that of the Mississippi River. The Adriatic Sea takes its name from the city, which means "Black Town."

Southwest of Rome lies Ostia, ancient port of Rome, at the mouth of the Tiber River. Its name comes from the Latin *ostium*, meaning "mouth."

Sand brought down to the sea by the Tiber finally made navigation at Ostia dangerous; so a new harbor named after Augustus was built three miles to the north on the right arm of the river. Today both of these former coastal towns are three miles inland. But modern machinery keeps both mouths of the Tiber open. Swamp lands have been drained and transformed into fertile fields and seaside resorts.

The site of Helike, capital of ancient Achaia in the northern Peloponnesus, cannot be shown on the map. Helice was destroyed by an earthquake and swallowed up by the sea.

The famous pass of Thermopylae, heroically defended by a handful of Spartans under Leonidas against the Persian army of Xerxes, was at the time of its defense a scant quarter of a mile from the sea. Alluvial soil carried via the Spercheios River for the past 2,430 years has forced the sea to recede, so that now the pass is some three miles from the coast. Modern Greece has recently drained the soil deposits and reclaimed the land for rice culture.*

Thermopylae, meaning "Hot Gates," is derived from the Greek words *thermos*, hot, and *pyle*, gate, so named because of the hot sulphur springs at the gateway to north and south Greece.

The town of Siena, Italy, noted for its excellent clay, gave its name to the English word "sienna." From ancient Ammonium in western Egypt, chief seat of worship and oracle of the god Ammon, is derived the words "ammonia" and "ammonium." The descriptive verb "meander" comes from the winding Menderes River (Maeander), south of Izmir, Turkey.

Placed above the title of the map is a list of well-known mythological characters given in both Greek and Roman forms. Thus the Goddess of Beauty was Venus to the Romans, Aphrodite to the Greeks. Hercules, hero of nearly every school child, is the Roman version of the Greek Heracles.

International boundaries on the new map are shown as they exist today. The Dodecanese, recently Italian, are now tinted yellow, the same as Greece, the mother country. The Italo-Yugoslav and Franco-Italian frontiers are shown according to World War II peace treaties. The new Free State of Trieste is not "free," but continues to be under military occupation because of Italian-Yugoslav failure to agree on an administrator.

* See "War-torn Greece Looks Ahead," by Maynard Owen Williams, page 511.

NATIONAL GEOGRAPHIC SOCIETY

GEOGRAPHIC ADMINISTRATION BUILDING
SIXTEENTH AND M STREETS NORTHWEST, WASHINGTON 6, D. C.

ORGANIZED FOR THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE

To carry out the purposes for which it was founded [illegible] The Society publishes The Magazine monthly. All [illegible] in The Magazine are paid or expended directly to promote [illegible].

Articles and photographs are desired. For matters [illegible] The Magazine [illegible].

[illegible] to the scientific and geographical sciences [illegible]. The Society has sponsored more than [illegible] scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's [illegible] have pushed back the [illegible] boundaries of the unknown throughout United States [illegible] centuries before it could be [illegible] the Atlantic [illegible] during the rule of the [illegible] communal dwellings in that [illegible]. The Society's [illegible] have [illegible] but [illegible] for three hundred years.

In Mexico The Society and the Smithsonian Institution, January 13, 1930, discovered the oldest [illegible] in the Americas for which we have a date. This [illegible] appears inscribed in Maya characters [illegible] Mayan Nine [illegible] inscriptions by 200 years antedating heretofore dated in America, and reveals a great center of early American culture previously unknown.

[illegible] The Society and the U. S. Army Air Corps, the [illegible] balloon, *Explorer II*, [illegible] record of 72,395 feet. Capt. A. [illegible] and Capt. Orvil A. Anderson [illegible] valuable [illegible] and published results of extraordinary value.

The National Geographic Society-U. S. Army Air Forces Expedition from a camp in southern Brazil [illegible] and observed the solar eclipse of 1947. [illegible] of The Society to [illegible] total eclipse of the sun.

The Society cooperated with Dr. William Beebe in deep sea exploration off Bermuda, during which a world record depth of 3,028 feet was attained.

The Society [illegible] when the congressional appropriation for the purchase was insufficient, and the lands of the giant sequoia [illegible] Grant Forest of Sequoia National Park in California were thereby saved for the American people.

One of the world's largest icebergs and glacial [illegible] in the polar regions was discovered by Alaska and taken by Hugh and Washburn while [illegible] Society and the Harvard Institute of Exploration, 1938.

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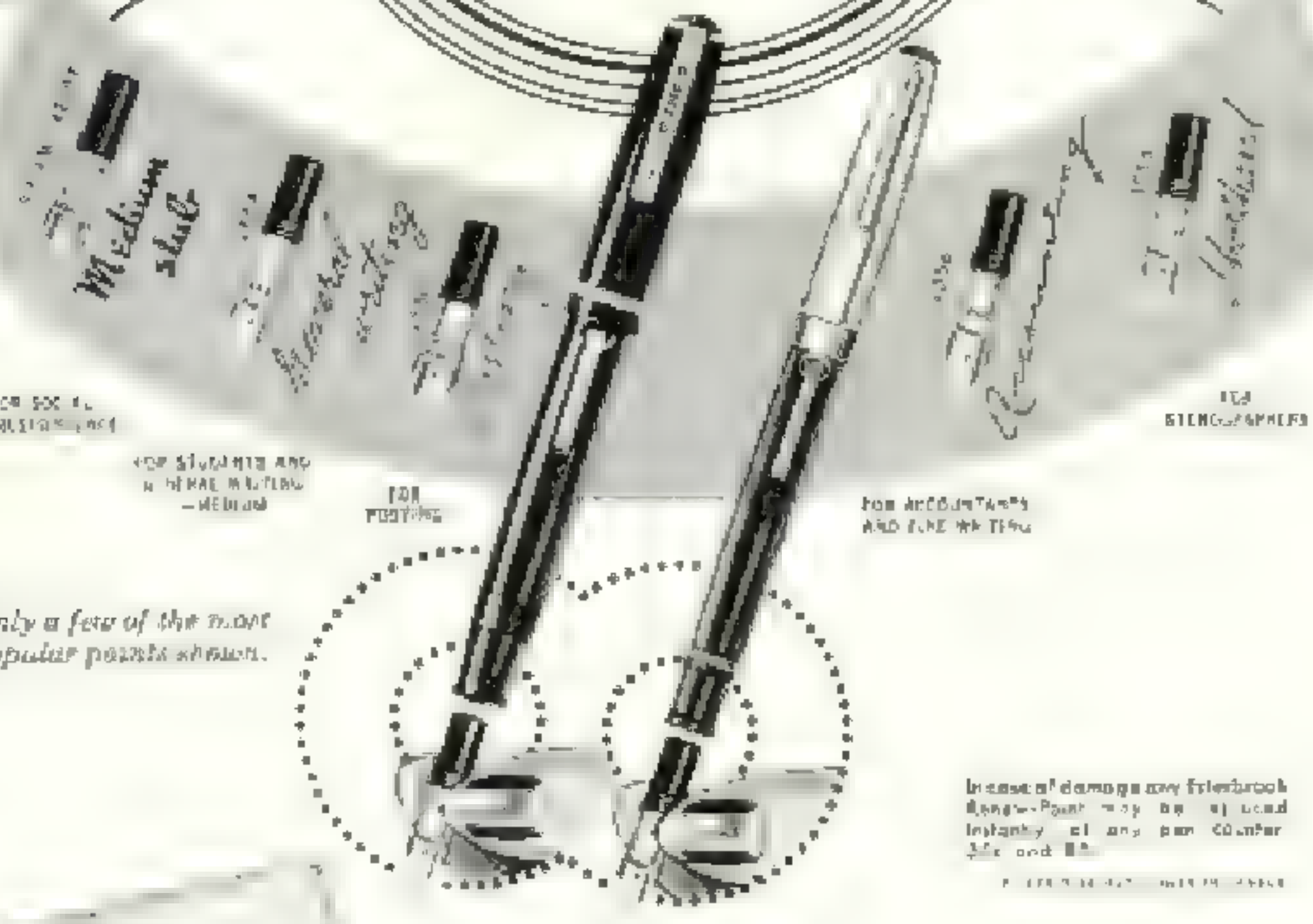

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[illegible] the application [illegible] to computing machi[illegible] [illegible] pe of man's creative [illegible]

[illegible] ough the use of electron tubes such as the one [illegible], IBM has produced machines which are hundre[illegible] times faster than calcula[illegible] [illegible] Accurate answers to [illegible] ng the most complicate[illegible] [illegible] ng obtained [illegible] minutes instead [illegible] f hours, days instead of month[illegible]

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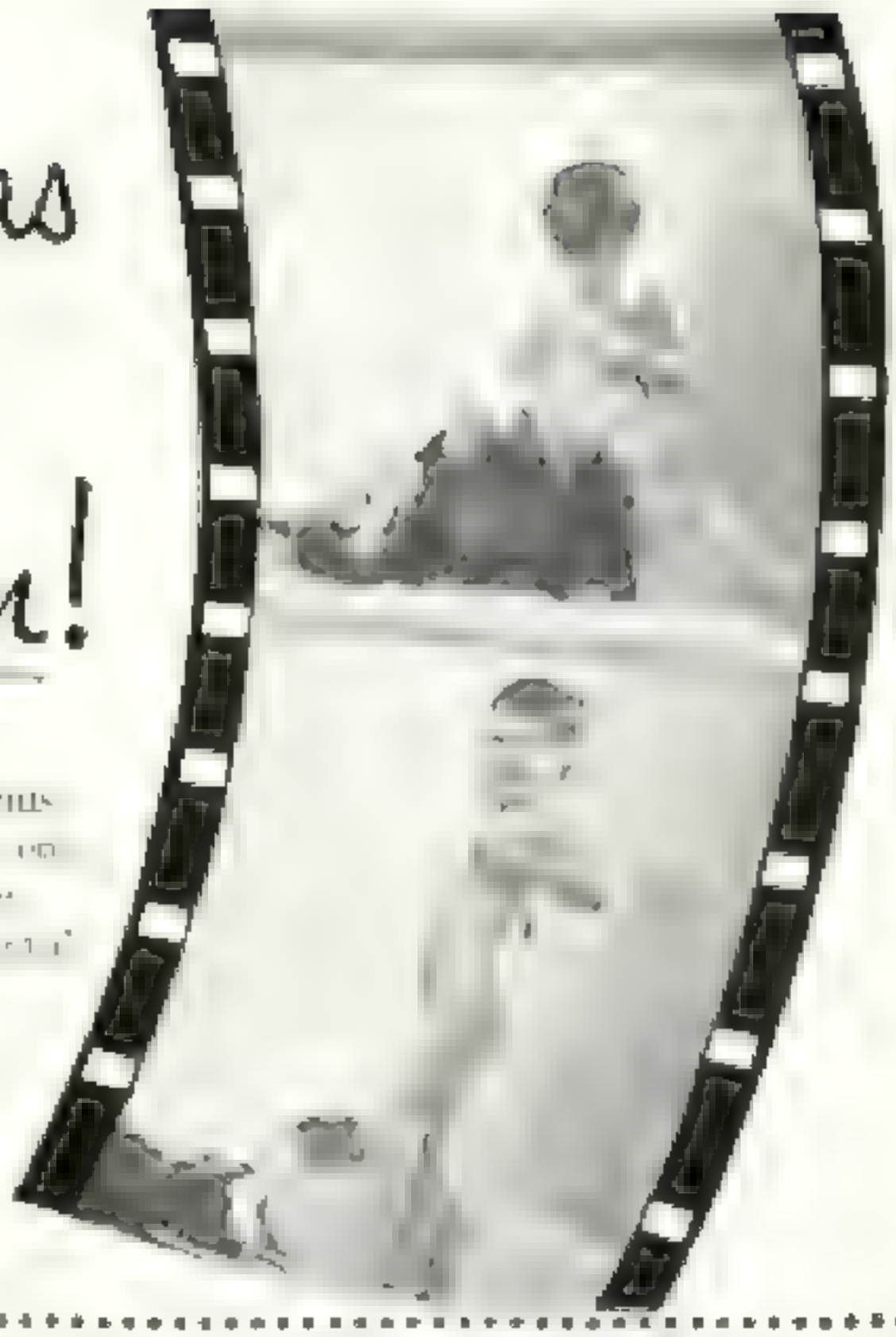
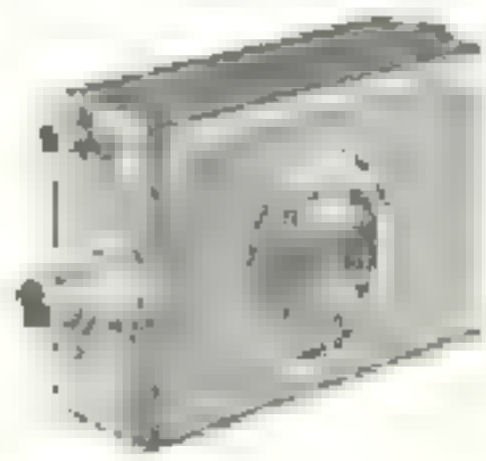


Foton.



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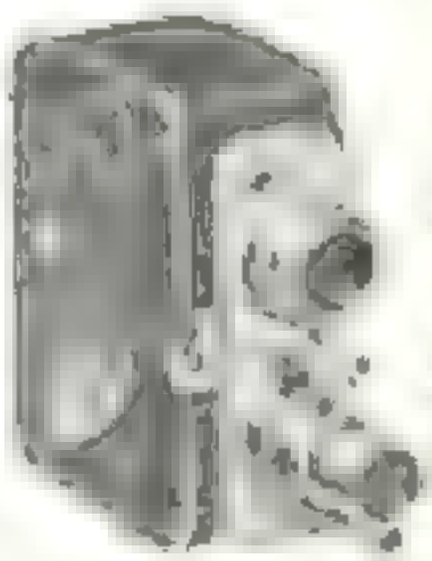

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New Southerner For The New South

From colorful New Orleans, through Mississippi, past Birmingham, Atlanta, the Piedmont [illegible] of the Carolinas and Virginia, the beautiful new Southerner over the Southern Railway to Washington and New York. The new Southerner, operating with 14 stainless steel cars built by The Budd Company.

It seems appropriate that our cars should serve the needs of the railroad which envisioned an industrial and prosperous South and has contributed so abundantly toward its attainment. For just as they have worked successfully for their ideals, we have worked for ours.

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The Budd Company, Phila., Detroit.

Budd

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How the whole family [illegible] pictures just [illegible] after you take them. The Polaroid Land Camera is easy [illegible] just snap the shutter, [illegible] pull a tab and a [illegible]

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ACTUAL SIZE

Start using the Polaroid Land* Camera the moment you open the box, for anyone can take good pictures [illegible] minute, indoors or out. Once-in-a-lifetime scenes — around the Christmas tree, the opening of the stockings, the family reunion — are yours for sure. You see each picture immediately, can improve pose and lighting as you go along. This is the only camera that gives you a second chance!

More than five million pictures have already been made by Polaroid Land Cameras. Professionals and amateurs alike are [illegible] Polaroid Camera opens a whole new field of photography.

Polaroid guarantees [illegible] camera [illegible] perfection [illegible] workmanship or materials.

For free booklet that answers all your questions about picture-in-a-minute photography, tells how you can take better pictures and have more fun doing it — write Polaroid Corporation Dept. N-6, Cambridge 39, Mass.

*Named for its inventor, Dr. Edwin H. Land

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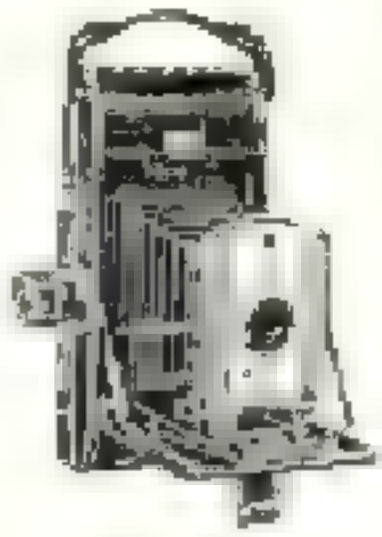

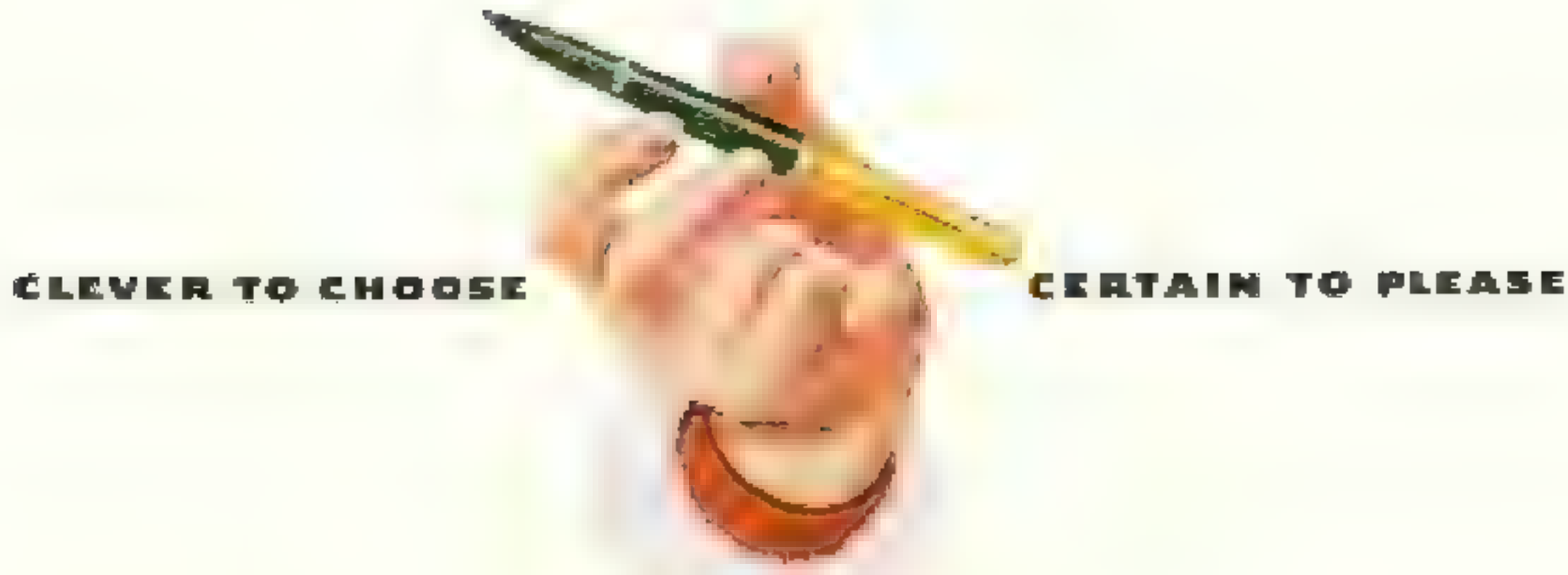

New *Aero-metric* PARKER "51"

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Exciting to get . . . delightful to give. Never have Christmas dollars brought so much in any pen.

[illegible] New "51". Beneath the [illegible] pen satisfaction [illegible] pen is new. The smartest shape [illegible]

supply . . . metered ink flow. And there's much more!

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* [illegible] lid size or [illegible] vitralloy, gold-filled caps $8.[illegible] up. Pens, $13.50 up. All metal custom [illegible] vitralloy, $29.75; gold-filled, $49.[illegible]; 14-k gold, $[illegible]

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FOR industries seeking greater opportunity for growth and progress, the South is a place that proves the old proverb wrong.

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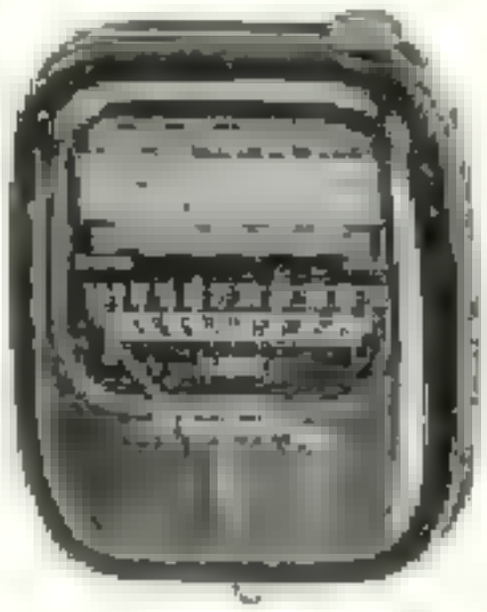

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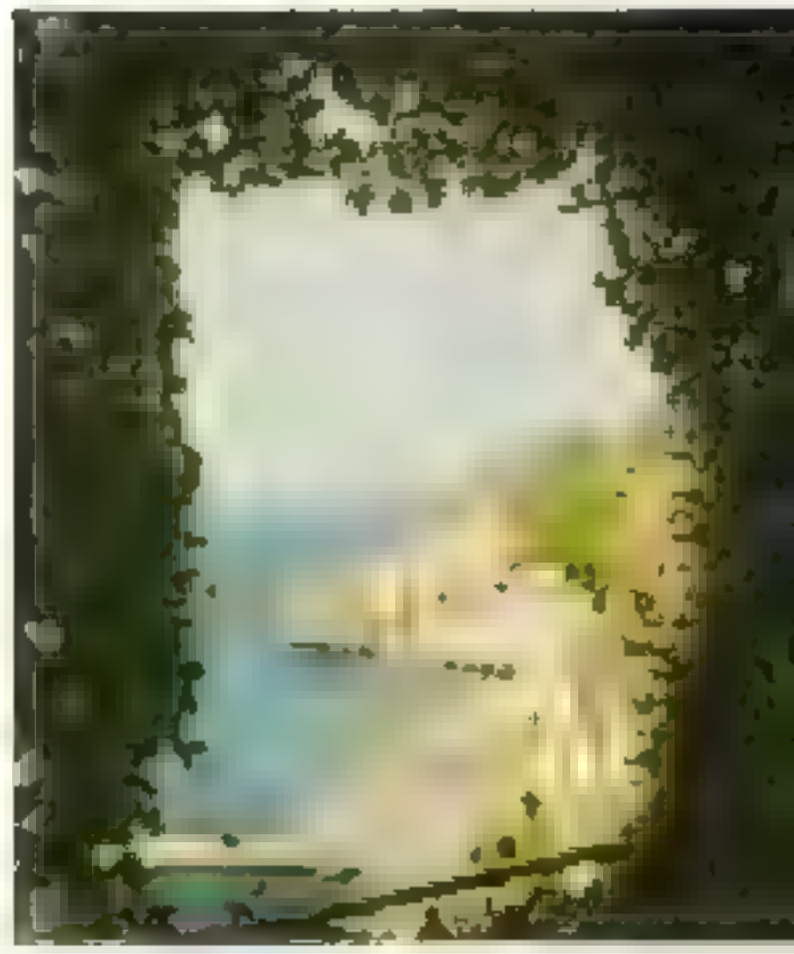

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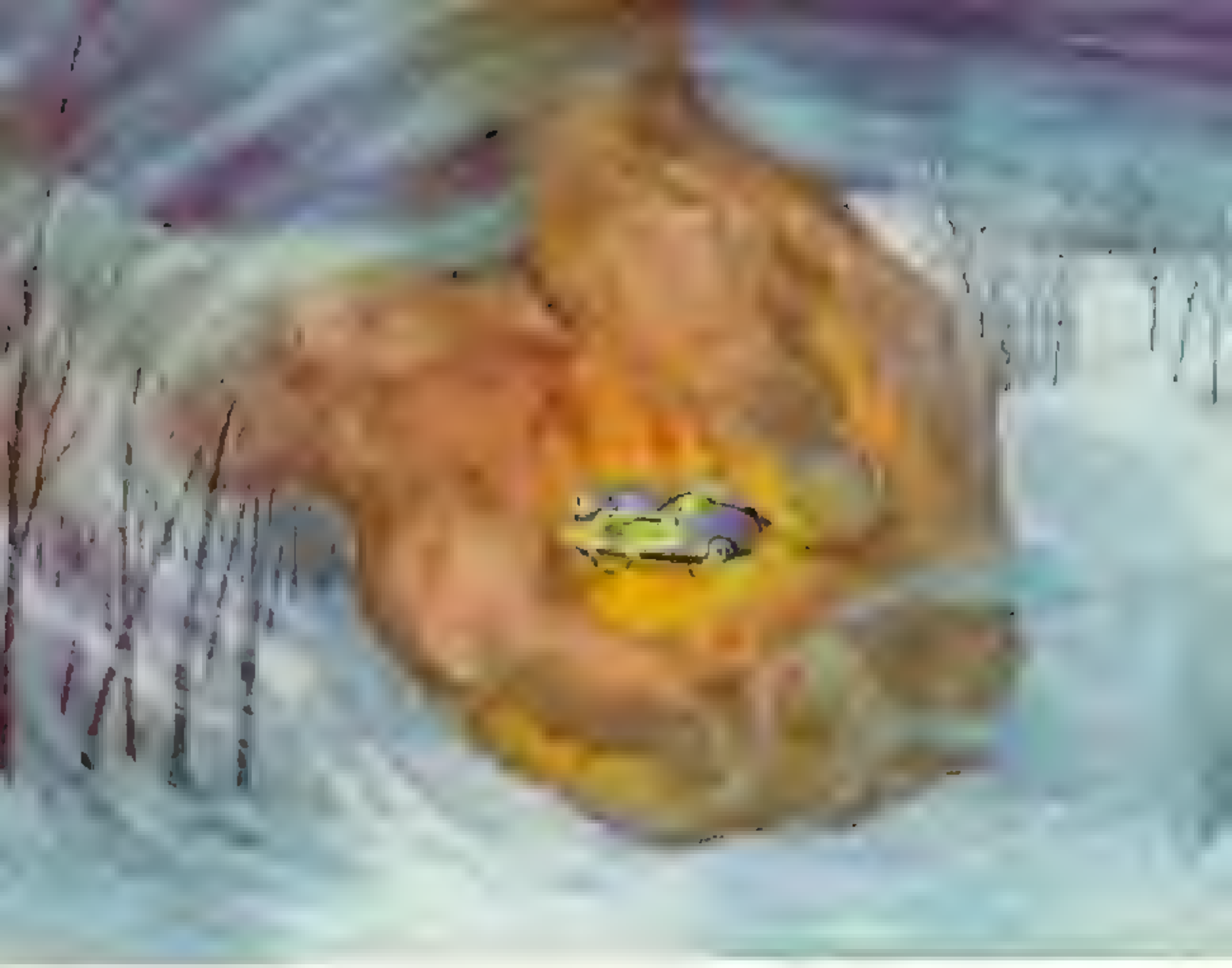

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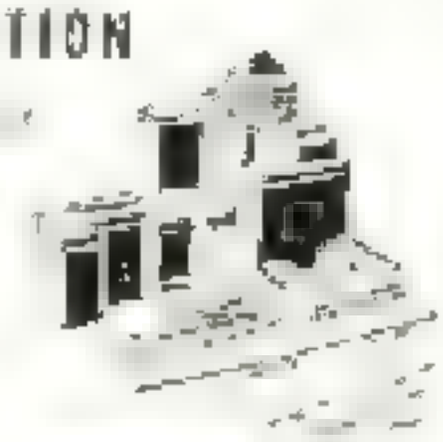

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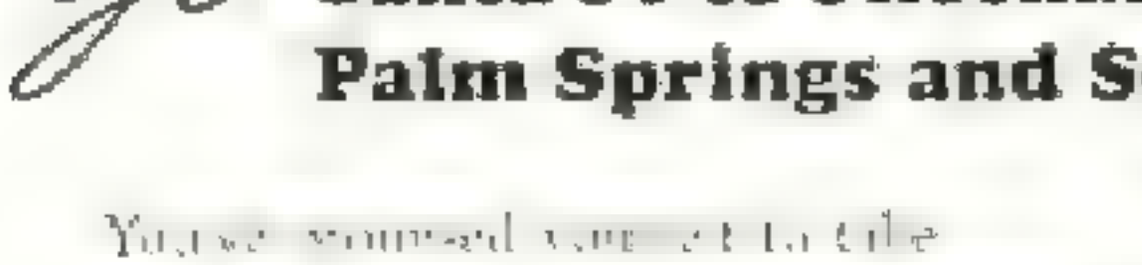

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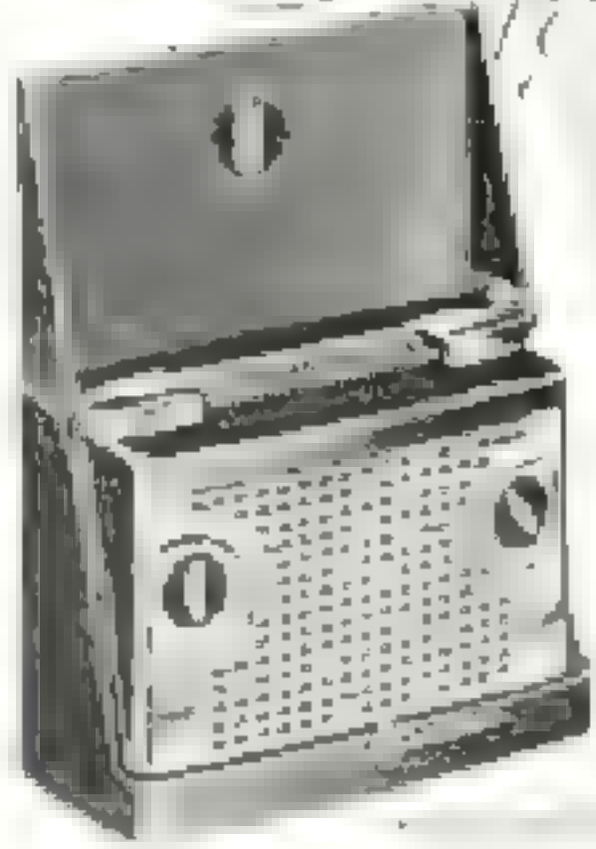

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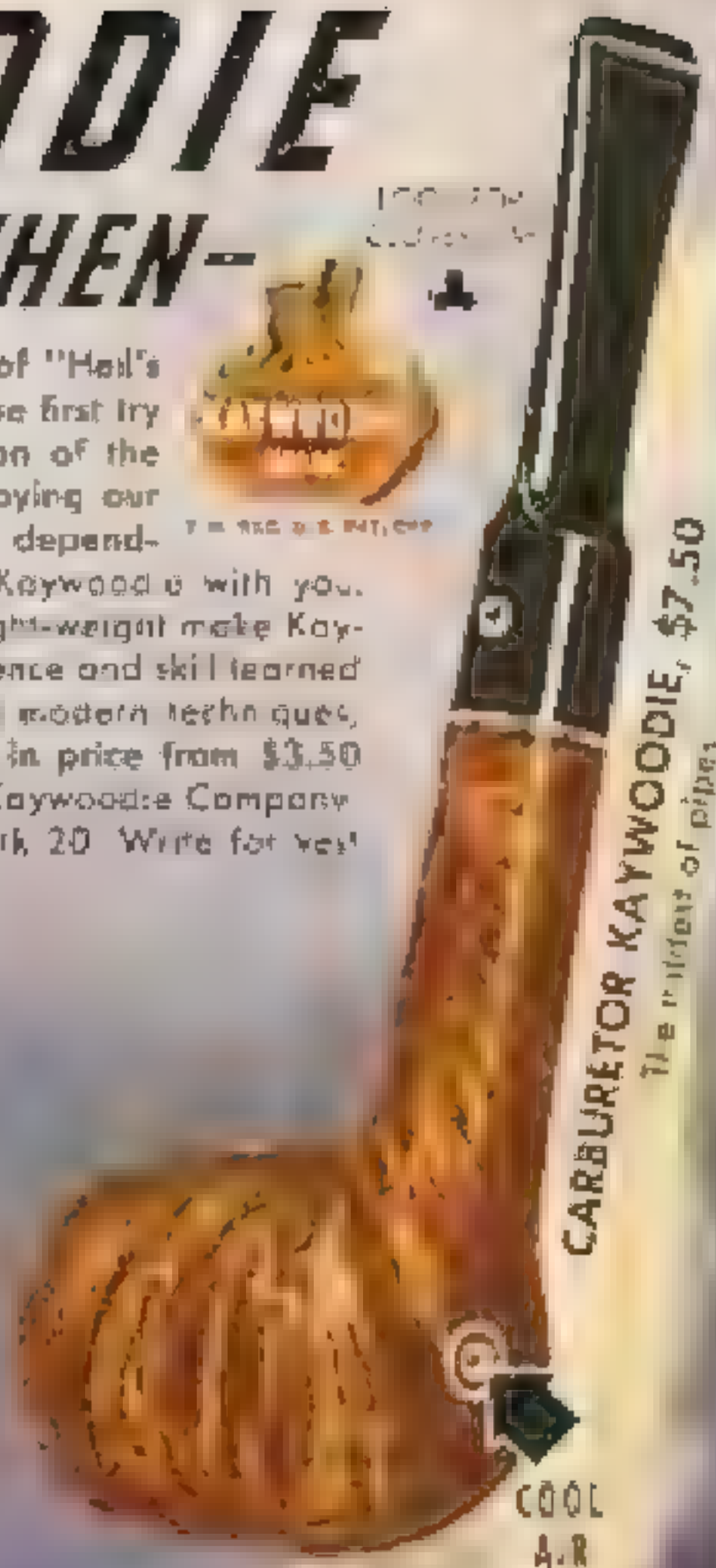
KAYWOODIE

REMEMBERS WHEN—

In 1869, our 18th year, the roaring waters of "Hell's Half Mile" smashed Major Powell's boat on the first try ever made to get through the Grand Canyon of the Colorado River. Many a trail-blazer was enjoying our pipes over his camp-fire, then as now. For dependability, steadiness, straight-thinking, take a Kaywoodie with you. Good smoking, balance, good proportions, light-weight make Kaywoodie a good companion. Made with experience and skill learned by our pipe-makers from their dads, with all modern techniques, equipment and research, Kaywoodies range in price from $3.50 to $25., same quality and prices as pre-war. Kaywoodie Company New York & London. 630 Fifth Ave. New York 20. Write for vest pocket pipe book in colors.



The Shaver Who Wears Shaves

A PRODUCT OF Remington Rand

Interwoven Socks for Christmas

There are more than a thousand different Interwoven Socks from which to choose ...the worthwhile gift.

Guaranteed by Good Housekeeping

DOUBLE-CHECKED *for* YOU

*REG. U.S. PAT. OFF.

For Safer Autumn Driving

Autumn, with its crisp, cool days, is usually one of the most pleasant seasons of the year for motoring—but this can be enjoyed only when it is safe.

The President's Highway Safety Conference reports that the traffic fatality rate has dropped steadily in the postwar period from 11.3 for each 100,000,000 miles of vehicle travel in 1947 to 7.3 in 1948. While this is encouraging, the 32,000 automobile accident fatalities last year indicate the need for greater improvement.

Safety authorities agree that most accidents are the result of driver mistakes. By far the most important cause of accidents is the failure of drivers to adjust speed to changing road and traffic conditions. For example, 50 per cent of all fatal accidents happen at night, when vision is obscured, and 14 per cent occur in rainy weather, when roads are slippery.

Traffic experts stress driving at reasonable speeds as one of the most important steps in reducing highway accidents. In addition, they make a number of other suggestions, some of which are illustrated below:

1. Vehicle defects are reported as contributing causes in many accidents. So, it is important to have your car completely checked at regular intervals to make sure it is in safe operating condition. Particular attention should be given at all times to brakes, tires, steering mechanism and lights.

2. Skidding on slippery surfaces is a frequent cause of accidents. To help prevent this, brakes should be applied with light pressure, then released and applied again. Jamming the brakes on will lock the wheels and may cause a skid.

3. Collisions frequently occur when cars are too close together. On dry pavements, a good rule is to allow one car length for every 10 miles of speed. This margin should be increased at night, on slippery roads, or at high speeds.

4. Emergencies need not always cause accidents if drivers know how to handle them. For example, when a tire blows out, keep a tight grip on the wheel and allow the car to slow down before applying the brakes. This makes it easier to prevent swerving or skidding.

"What a miracle you look in a Christmas wish!"

said **ELIZABETH TAYLOR**

when she became aware of

the DuraPower Mainspring

in **ELGIN** *that are*

as beautiful they were the

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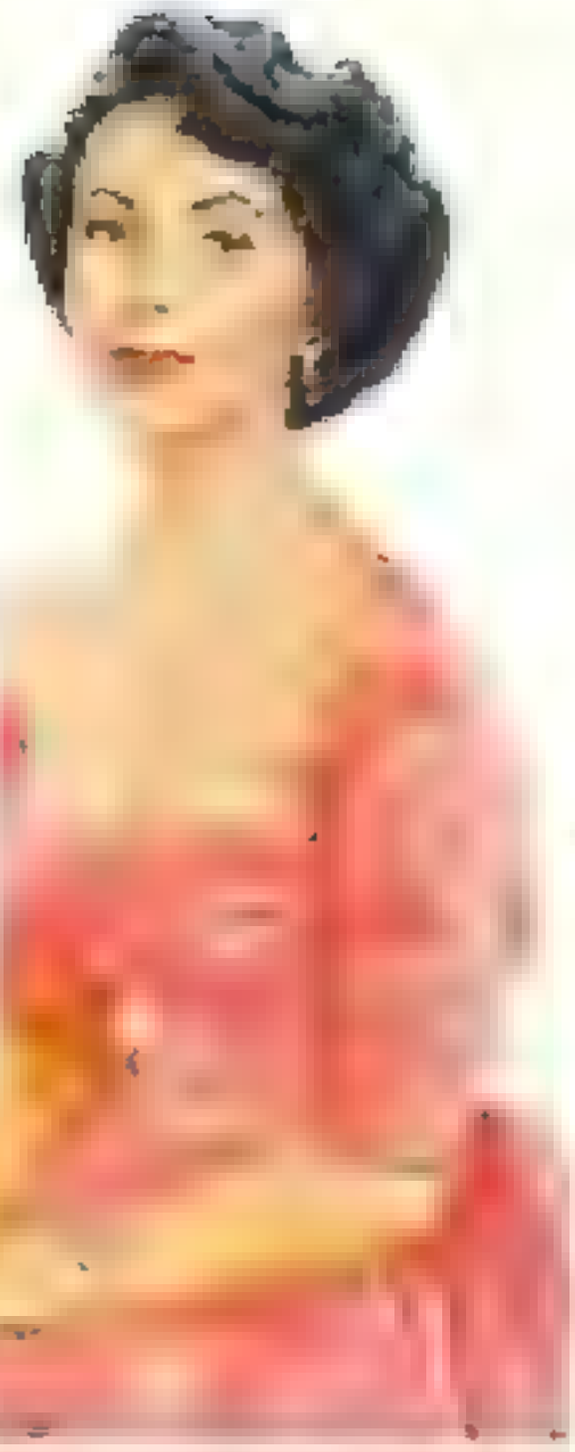

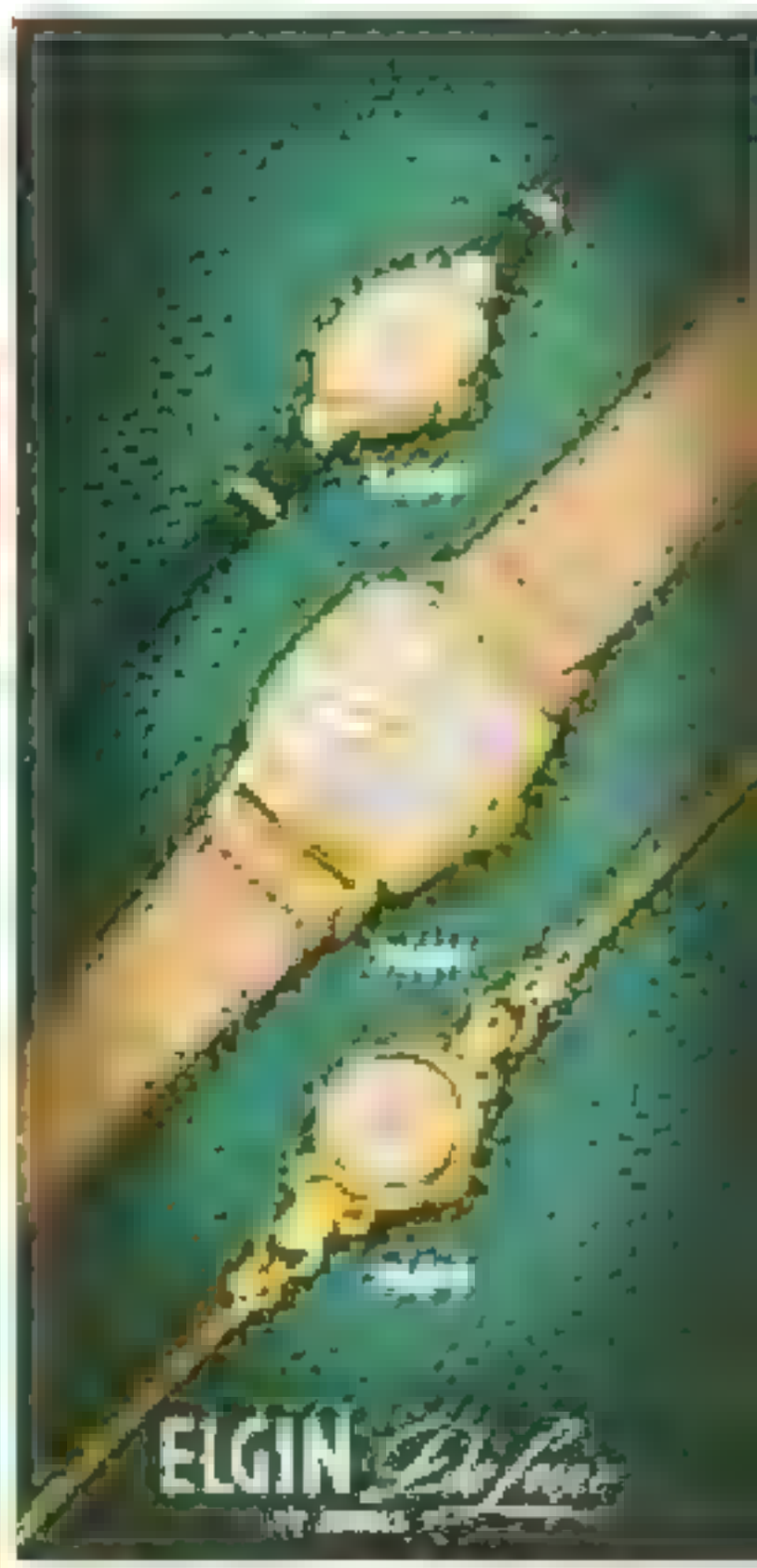

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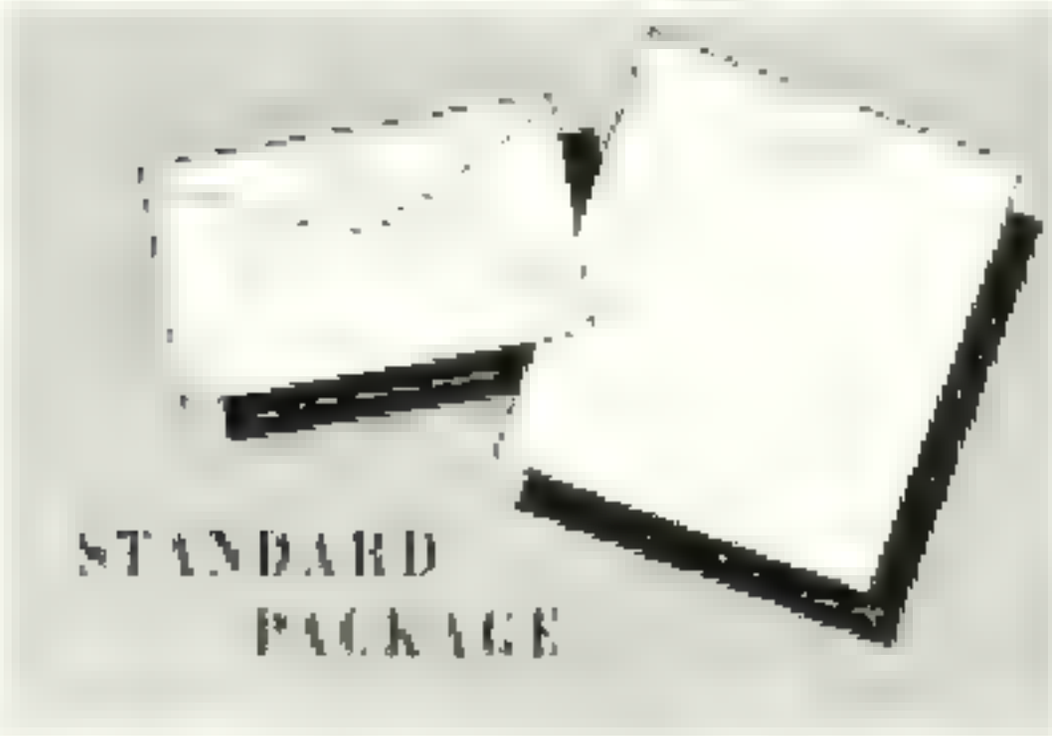

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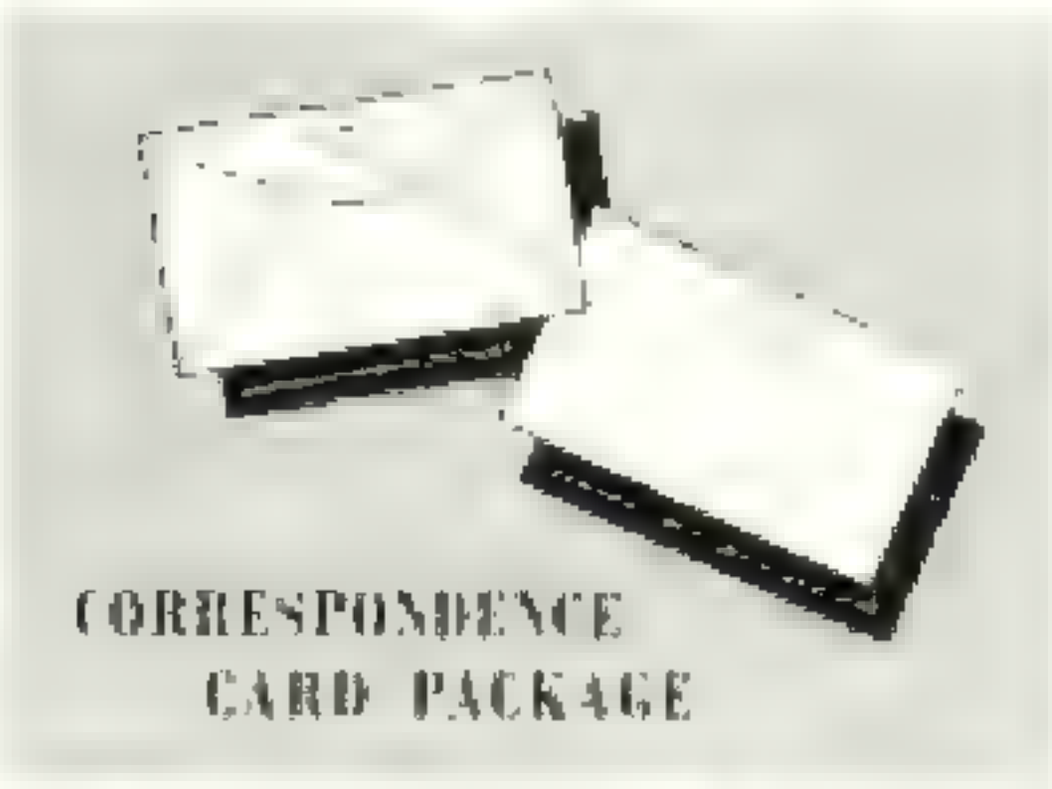

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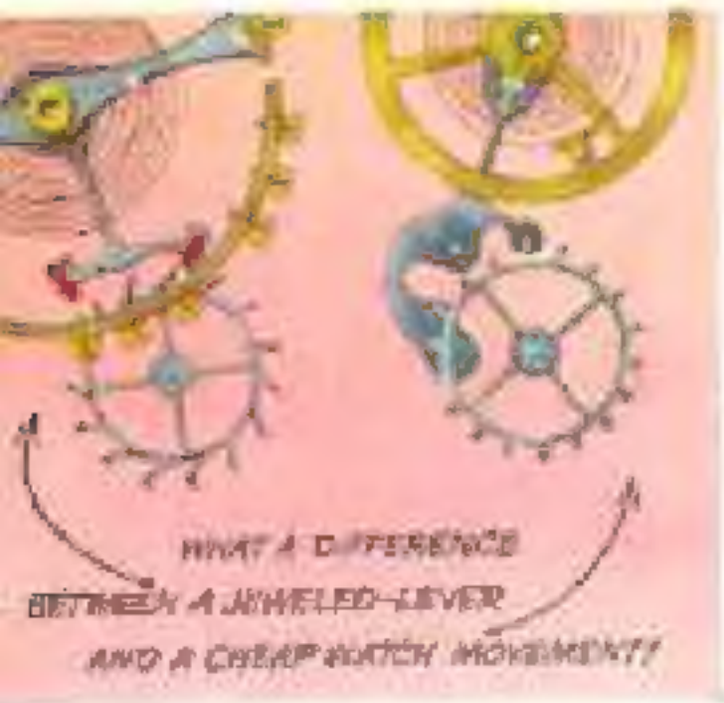

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